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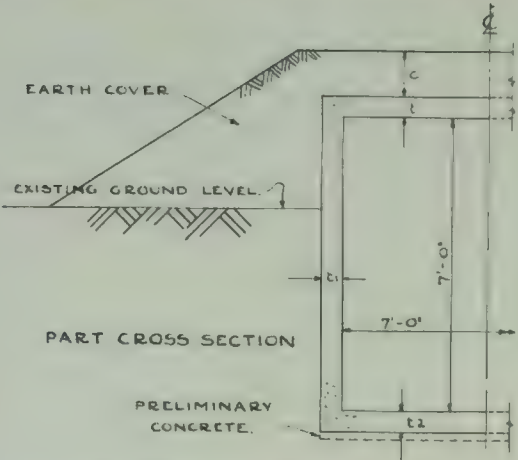
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The Safety-Cost Relationship for Certain  
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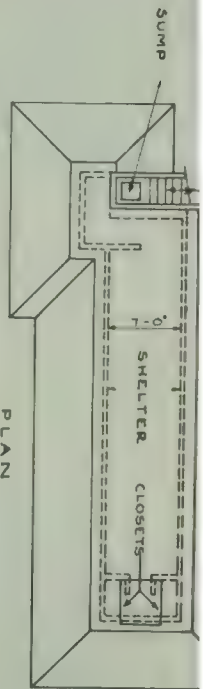
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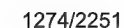
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CASE No	BLAST LOAD	ROOF THICKNESS (IN)	WALL THICKNESS (IN)	FLOOR THICKNESS (IN)	EARTH COVER FEET	WT OF REINFORCEMENT PER FT. RUN OF SHELTER (LB)	TOTAL WT OF STEEL IN SHELTER (LB)
1	1400	7½	5	5	1.0	46.9	2110
	1000	6	"	"	"	41.3	1896
	500	5	"	"	"	35.6	1701
	250	"	"	"	"	33.0	1606
2	1400	7½	5½	5½	2.0	51.7	2367
	1000	6	5	5	"	51.3	2352
	500	5	"	"	"	47.9	2237
	250	"	"	"	"	"	"
3	1400	7½	6	6	3.0	55.2	2593
	1000	6	"	"	"	53.1	2523
	500	"	"	"	"	50.0	2413
	250	"	"	"	"	"	"
4	1400	7½	6½	6½	5.0	65.6	3115
	1000	6½	"	"	"	63.0	3025
	500	"	"	"	"	"	"
	250	"	"	"	"	"	"



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UNITED KINGDOM ATOMIC ENERGY AUTHORITY

**UK true land surface burst Buffalo-2, Maralinga**

ATOMIC WEAPONS RESEARCH ESTABLISHMENT

REPORT No. T 49/57

OPERATION BUFFALO

The Radiation Survey of Ground Deposited Radioactivity

J. J. Rae

DECLASSIFIED FOR  
BY [redacted] LDERMAS

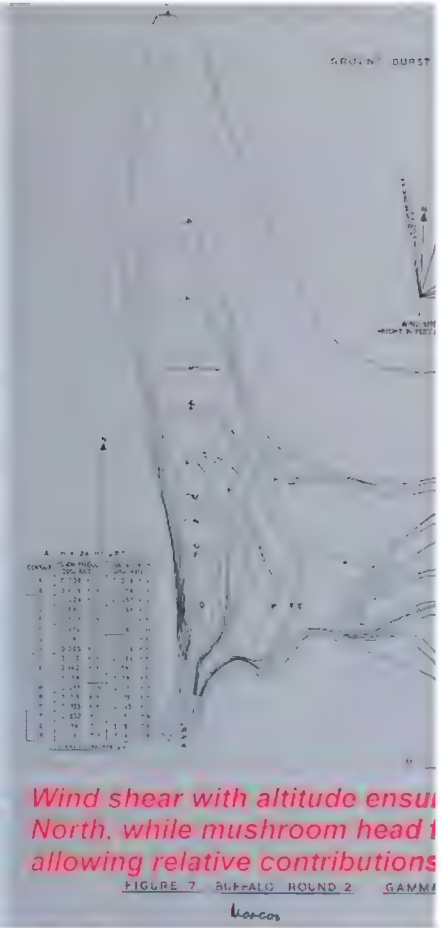
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UK UNCLASSIFIED

August, 1957



CT 12960

CONFIDENTIAL

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CD/SA 101

Downwind fallout areas from ground-burst  
megaton explosions

1. Information available in 1958

(i) The U.S. publication "The Effects of Nuclear Weapons" *GLASSTONE, 1957 edition*  
paragraphs 9.71 to 9.73

(ii) The U.S. publication "Capabilities of Atomic Weapons" *TM 23-200*  
fig. 4-4B, prepared by the Armed Forces Special Weapons  
Project; originally highly classified but now downgraded to  
"Confidential". This is at present under revision.

A comparison of the various figures for a few dose rates is given in  
Table 1.

Table 1

Areas of downwind contamination (sq. miles)

NOTE: at 1 Mt, TM 23-200 Capabilities gives half Glasstone's E.N.W.  
fallout areas for 300-3000 R/hr at 1 hr

Dose rate contour @ H + 1 r.p.h.	1 MT; 100% fission		10 MT; 100% fission	
	(i) E.N.W. & U.K. Nuclear Weapons	(ii) Capabilities	(i) E.N.W. & U.K. Nuclear Weapons	(ii) Capabilities
3000	54	27	540	650
1000	210	110	2100	1750
300	650	350	6500	5000
100	1500	1100	15000	18500
30	3300	3500	33500	43000

N.B. The Capabilities data is approximately summarised in the  
expression  
$$AR = \frac{10^5}{P^{-1.2}}$$

NOTE: for 20 kt  
fission yield,  
Capabilities TM  
23-200 Fig. 4-14A  
gives 80% of the  
fallout areas in  
E.N.W. 1957 for  
10-3000 R/hr at 1 hr

Where A = area in sq. miles  
R = dose rate contour in r.p.h.  
P = power of weapon in MT

(b) The fallout pattern *(Triffet's Tewa*

This is Fig. 7 on page 80 of the 1959  
stated to be for a 5 MT explosion. No fig  
as the whole of the article in which this  
50% fission yield weapon, it seems reasona  
also intended for a 50% fission yield. *(Re*

The 25 r.p.h., 100 r.p.h. and 500 r.p.  
and the areas compared with those from Cap

Table 3

Areas of downwind contamination  
Comparison of U.S. fallout pattern

Dose rate contour @ H + 1 r.p.h.	5 MT: 50% <i>Redwing-Tewa</i> Fig. 7. p.80 1959 Hearings
500	2,000
100	6,000
25	30,000

Comparison of fallout prediction

MEASURED DOSE RATE  
CONTOURS

a. 2,500  
b. 1,000  
c. 500  
d. 250

*Redwing Tewa  
fallout pattern as  
shown in the 1959  
and 1974 UK  
"Nuclear Weapons"*

PREDICTED AREA  
OF FALLOUT

November 1960.

CONFIDENTIAL

<https://glasstone.blogspot.com>

1276/2251



Note: the DELFIC, SIMFIC and other computer predicted fallout area comparisons for the 110 kt Bikini Atoll Castle-Koon land surface burst nuclear test are false since the distance scale of Bikini Atoll is massively exaggerated on many maps, e.g. in the Secret January 1955 AFSWP "Fall-out Symposium", the Castle fallout report WT-915, and the fallout patterns compendium DASA-1251! The Western side of the Bikini Atoll reef is at 165.2 degrees East, while the most eastern island in the Bikini Atoll, Enyu, is at 165.567 degrees East: since there are 60 nautical miles per degree by definition, the width of Bikini Atoll is therefore  $(165.567 - 165.2)(60) = 22$  nautical miles, approximately half the distance shown in the Castle-Koon fallout patterns. Since area is proportional to the square of the distance scale, this constitutes a serious exaggeration in fallout casualty calculations, before you get into the issue of the low energy (0.1-0.2 MeV) gamma rays from neutron induced Np239 and U237 in the fallout enhancing the protection factor of shelters (usually calculated assuming hard 1.17 and 1.33 MeV gamma rads from Co60), during the sheltering period of approximately 1-14 days after detonation.





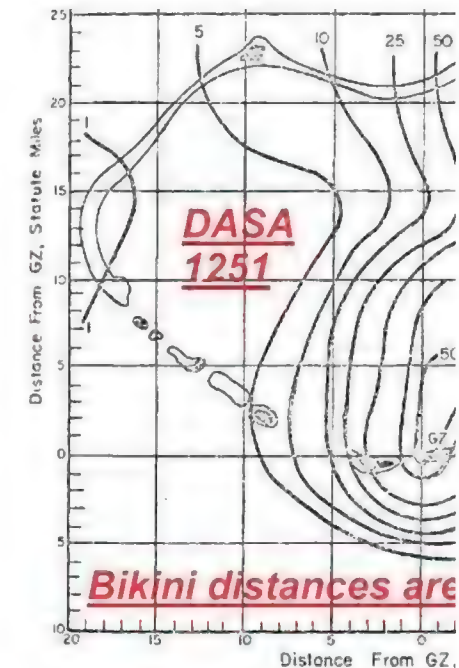


Figure 48 . Operation CASTLE -  
On-site dose rate

**Above: FAKE distance  
Atoll 110kt surface burst  
fallout map: 500 R/h  
6 miles (10 km) long**

Contour (Roentgen hr <sup>-1</sup> )	Observed/DELFC/SIMFIC Area (km <sup>2</sup> )	Hotline Length (km)
500	32.0/26.0/44.0	10.2/12.5/14.9
250	<i>FAKE</i> 122/87.3/116	<i>FAKE</i> 17.3/24.2/24.1
100	550/261/374	41.0/39.5/41.6

The Western side of the island is at 165.2 degrees East, while the Eastern side is at 169.2 degrees East: since the distance is 4 degrees, and there are 60 nautical miles per degree by definition, the distance from the Western side of Bikini Atoll is therefore 240 nautical miles. Since the area of a circle is  $\pi r^2$ , the area to the square of the distance, the area of the circle constitutes a serious error in the casualty calculations, I


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ATOMIC WEAPONS RESEARCH ESTABLISHMENT

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AWRE REPORT No. T 10/60

On the Resuspension in the Atmosphere of Radioactive  
or Other Fine Particulate Material Deposited on the Ground

K. Stewart

A W.R.E.,  
Aldermaston, Berks.

November, 1960

Report: AWRE-T-10/60  
UK National Archives: ES 5/284

TABLE 1  
Summary of Experimental Results on Resuspension of Activity

Trial	General Circumstances of Measurement	Range
Hurricane 25 kt ship	Sample of airborne material obtained without artificial disturbance of ground surface (12 results)	$1 \times 10^{-8}$ to $8 \times 10^{-8}$ but 10 values lie between $0.47 \times 10^{-8}$ to $1.6 \times 10^{-8}$
8-10 kt bursts on 100 ft towers	Random samples collected in region of T1 crater in absence of artificial disturbance of the ground (9 results)	$1 \times 10^{-8}$ to $1 \times 10^{-8}$
	Surveys on C and D roads of grid - no artificial disturbance of ground surface (14 results, with 6 indefinite but measured values all $< 2 \times 10^{-8}$ )	$1.5 \times 10^{-8}$ to $1 \times 10^{-8}$
	Surveys on "Dingo" road - samples collected at back of Land-rover in motion (21 results, 10 of which 2 were obtained over the tailboard) on the 4th and 7th days after the first test	On 4th day: $0.8 \times 10^{-8}$ On 7th day: $0.6 \times 10^{-8}$ On 7th day: 1.6 and 3.1 at tailboard
	Survey of road to Site C (10 results) on 1st and 2nd days after the second test. Of these, 3 are indeterminate but less than $2 \times 10^{-8}$ and only 2 are $> 1 \times 10^{-8}$	$1 \times 10^{-8}$ to $2 \times 10^{-8}$
Butlalo	Sample collected during an instrument recovery sortie in which the sampler, a cascade impactor, was carried in the driving compartment of a Landrover for part of the time and was outside the stationary vehicle near the working party for the remainder: Round 1 (H + 18 hr) 15 kt on 100 ft tower Round 2 (H + 5 hr) 1.5 kt true surface burst	$2.5 \times 10^{-8}$ but only above $6.4 \times 10^{-8}$ but only above
Civil at Falfield	Representative brick/plaster dust sample contaminated with I-131 and distributed on greater amount of dust and used during two realistic Civil Defence, bomb-site, recovery trials: 1. Enclosed Space 2. Open Area	Dust loading: 110 Dust loading: 10 m
Some representative results obtained during Health Physics surveillance of minor experimental trials at Aldermaston	1. Uranium (1957) sample collected immediately downwind of crater at: 1 ft above ground 2 ft above ground 1 ft above ground (dust stirred up)	
	2. Plutonium (1959 Vixen) sample collected at: 1 ft above ground - dust created by vehicles - dust created by pedestrian	

Type of Particulate Material	Terminal or Deposition Velocity, m/sec	$K_1$ $m^{-1}$	Estimated Half-Life for Contaminated Zone (days) for:			Theoretical Downwind Contamination at Point P, $\mu g/m^2$
			$K$ $1 \times 10^{-4}$	$K$ $1 \times 10^{-5}$	$K$ $1 \times 10^{-6}$	
Very fine dust ) diameter $\leq 1 \mu$	0.001 0.002	30 f 30 f	2.5 2.6	25 26	250 260	
Fine dust up ) to about $20 \mu$	0.01 0.02	26 f 23 f	2.9 3.4	29 34	290 340	500
Coarse dust, ) fine sand $\sim 50 \mu$	0.1 0.2	10 f 5 f	16 160	160 1600	1600 16,000	160 13

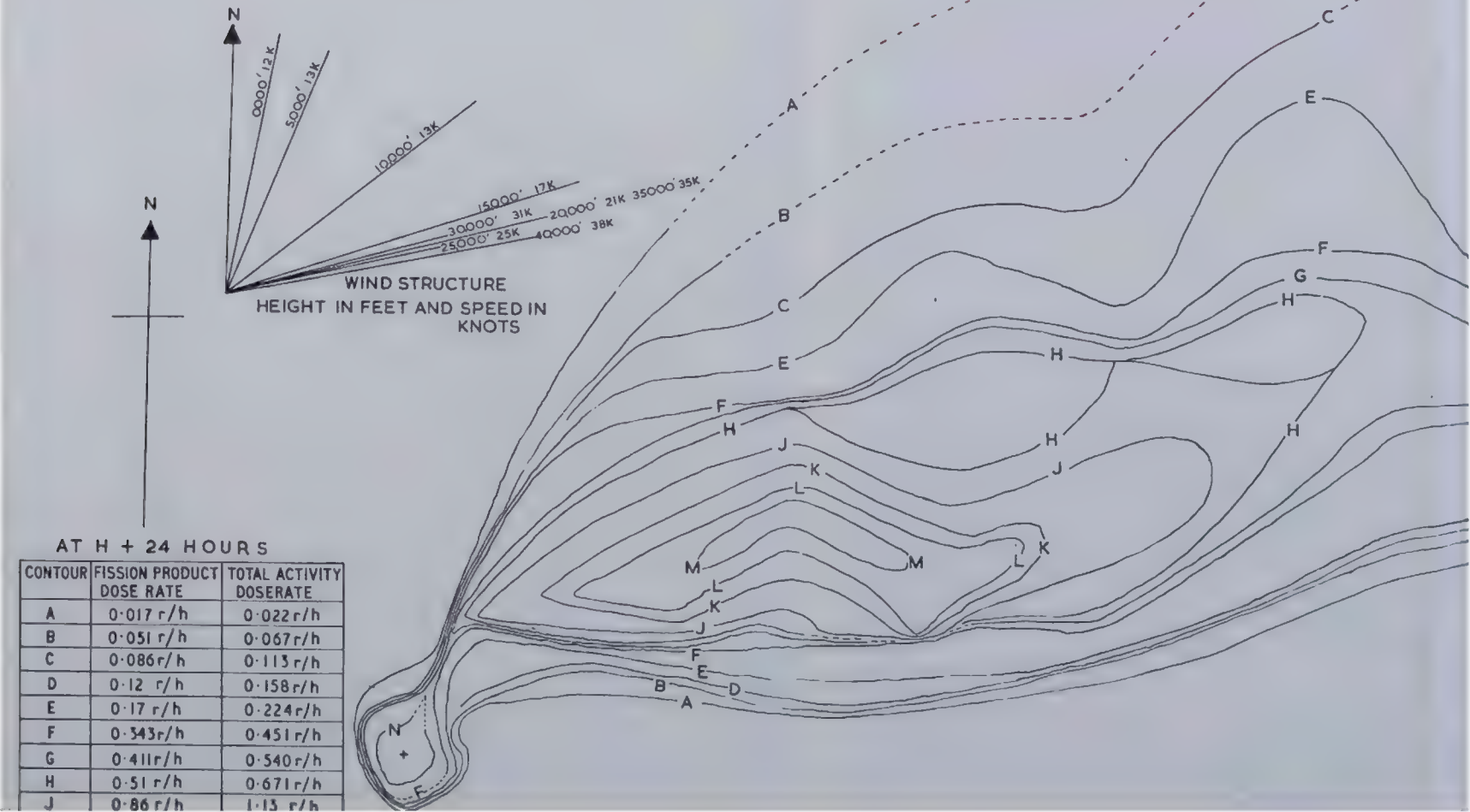




Buffalo-1, Maralinga, low air burst on 100 ft tower

Clear evidence of hotspot 2-5 miles downwind

EXPLOSION OF 15 K TON (APPROX) WEAPON



K	1.2 r/h	1.58 r/h
L	1.37 r/h	1.8 r/h
M	1.68 r/h	2.21 r/h
N	10.29 r/h	13.53 r/h

CONVERSION FACTOR 1.3

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FIGURE 4. BUFFALO ROUND 1. GAMMA DOSE RATE CONTOURS.

One Tree



# Buffalo-4, Maralinga, low air burst on 100 ft tower

EXPLOSION OF 15 KTON (APPROX) WEAPON

Clear evidence of hotspot 1-3 miles downwind

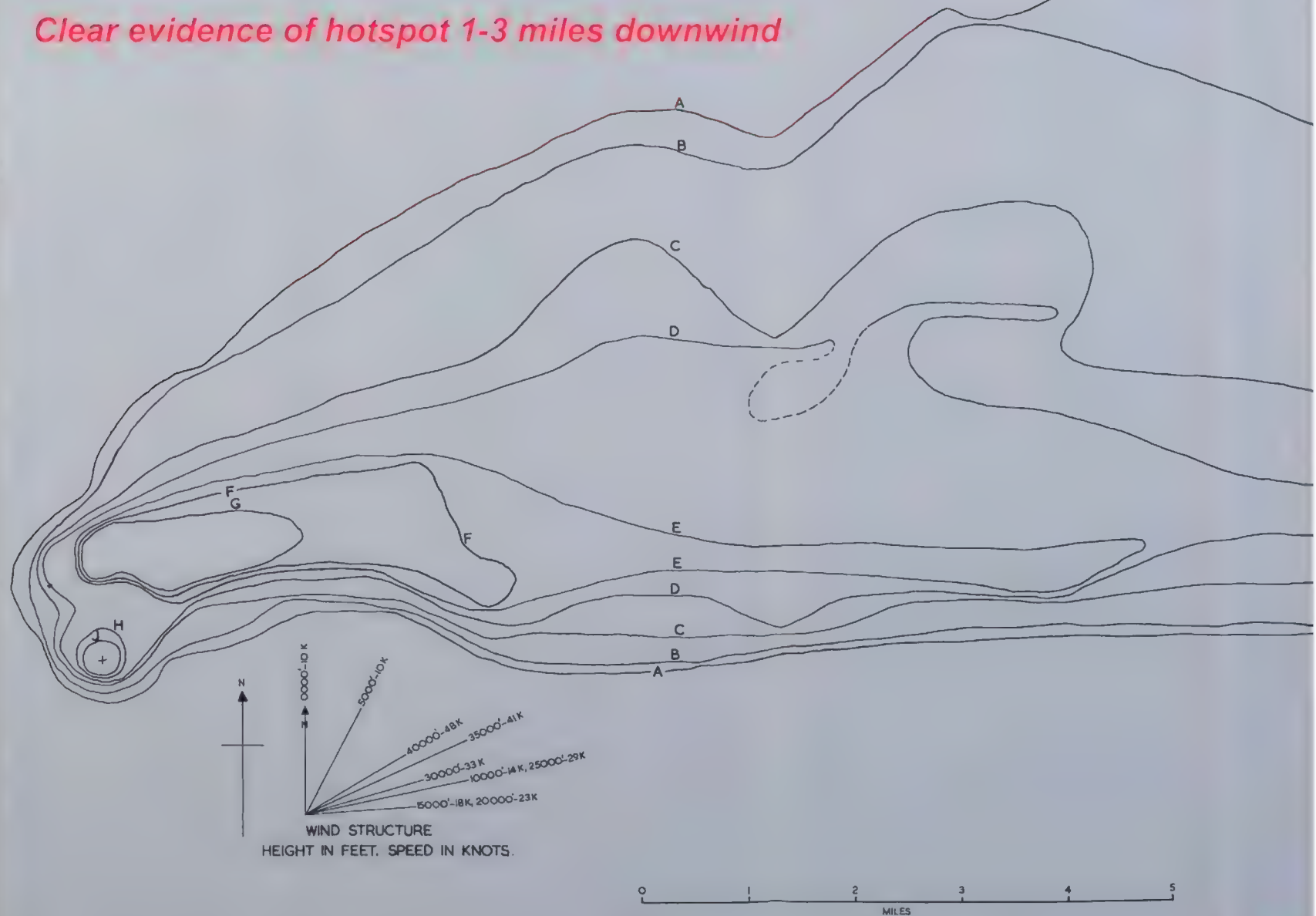


FIGURE 9

BUFFALO ROUND 4

GAMMA DOSE RATE CONTOURS

Atomic  
Establishment





# Los Angeles Times



SUNDAY, DECEMBER 18, 1960

Section

MAX LERNER:

## A Look at the Nuclear Ho

I have been reading a hair-raising, terrifying, sober and important book. It is "On Thermonuclear War," by Herman Kahn, which has just been published (Princeton), and which may well turn out to be the most important political-military work of our era.

He feels that much of the "liberal" thinking about nuclear weapons is soft, fuzzy and unnecessarily innocent. He is strongly against unilateral disarmament, against tender-mindedness in dealing with the Russians, against "excessive accommodation," against assum-

Hence, to propose should do First Stri not to u ventive w to convin that Amer itself only Russia's capable o she is pro

ing that trust and faith on our part will generate equal qualities on theirs. she is pro





THE EVENING SUN, BALTIMORE  
WEDNESDAY, JUNE 27, 1962

A 24

## Books In Review

### A Prod To More Rational Thinking About Thermonuclear Policy

THINKING ABOUT THE UNTHINKABLE. By Herman Kahn,  
Horizon Press. \$4.50.

Mr. Kahn contributes some substantial ideas on civil defense, based on his suspicion that destruction of an enemy population is far from a likely first aim; hence that there is a larger chance of city survival than has sometimes been thought, and hence justification for increased effort to save as many civilian lives as possible. This is not comparable to the real first priority objective, which is the full deterrence of war, but it is not negligible. The author sharply dis-

Against that large and well presented background Mr. Kahn lists the problems of the future. Most of them are extremely disagreeable but that does not disqualify them as subjects for sober thinking. He follows with a recital of fourteen possible national policies, ranging from a total renunciation of all violence to a pre-emptive war. In that gamut almost anyone can find his own favorite policy, with a certainty that he will be opposed by advocates of

...the author sharply dis-  
counts some of the gloomiest pre-  
dictions of total destruction and,  
while recognizing the tragedy of  
any civilian loss at all, insists  
that reduction of the loss is not  
only possible but wholly desirable.

—o—

all the other thirteen.

This granted, some thinking on  
the future is still desirable, par-  
ticularly if Mr. Kahn is right in  
his estimate that the decade of  
the Sixties will prove more of a  
turning-point than any other  
period of the century. And if he  
is right in his reasonable belief  
that even lucky muddling-through  
would benefit by some guidance  
from systematic thinking.

MARK S. WATSON.

---



# Thermonuclear bogy

By John Strachey

*THINKING ABOUT THE UNTHINKABLE. By Herman Kahn. (Weidenfeld and Nicolson)*

**A**S Mr. Michael Howard, the military historian, is accustomed to insist, the three great "scandalisers" of the modern epoch have been Machiavelli, Clausewitz and Marx. What is it, he asks, that these three so apparently unrelated thinkers have in common which has made them bogymen to the general public? His answer is that these three men, to a greater extent than anyone else (except perhaps Hobbes?), thought in terms of power and power relationships. They seemed, though this was by no means exclusively the case, to ask, not what ought to be done, but what will happen, given the existing power relationships in the world.

Now people apparently cannot easily bear this approach. Power is so terrible and ominous a thing that we still have deep reservations about

we still have deep repressions about its discussion. "Mankind," as Mr. Eliot has it, "cannot bear very much reality." And apparently it can bear hardly any reality at all over this question of power.



It is instructive to observe that exactly the same fate has overtaken one of the principal analysts of the conflicts of the present nuclear age. Mr. Herman Kahn.



14 The Sydney Morning Herald, Saturday, June 1, 1953

# Nuclear Gamesmanship

**EVER** since the publication of "On Thermo-nuclear War," Herman Kahn has been either denounced as a warmonger or praised as a military realist.

There seems to be no middle view of him. For someone who claims to be dispassionately devoted to the study of modern strategy, he has aroused strange passions. Bertrand Russell has virtually labelled him a sadist; but John Strachey, the British Labour M.P. who is among his admirers, compares him with Machiavelli, Clausewitz and Marx as an analyst in power.

His supporters hold that

**THINKING ABOUT THE UNTHINKABLE**, by Herman Kahn. — Weidenfeld and Nicolson, London. 254 pp. 31s.

right or wrong, good or bad, and to be investigating it simply as a possible phenomenon.

Mr Kahn naturally supports his supporters and maintains that he should not be judged on moral grounds.

But the fact remains that his work is deeply coloured by moral commitment. He is committed to the political stance of the West, to the idea of survival and recuperation after a holocaust, to belief in war as an instru-

sense that practical tions, both material, can be in order to reduce the ter to a minimum, the sense that moral sacrifice of 50 million or 550 people is worthwhile.

These attitudes inform the so-called objectivity of his judgments.

"On Thermo-nuclear War" touched off a tremendous debate over civil defence in the United States. Kahn's special achievement was that he confounded doomsday seers and lulled the faith of Americans—the faith is neatly expressed



he cannot be said to urge the waging of thermo-nuclear war any more than, for instance, Machiavelli can be said to advocate the use of the political manoeuvrings described in "The Prince." In other words, Mr Kahn is supposed to stand outside the moral question of whether mass annihilation is

ment of persuasion.

To him, thermo-nuclear war is thinkable not only in the practical sense that its results can be calculated, but in the moral sense that, under certain circumstances, it could be desirable.

To him, such a war is manageable, not only in the

words broadcast by speakers in some New schools as the pupils in corridors and desks during the p air-raid drill: "Remember children—you can't

His new book of thoughts on the of how wars are caused and might be

The Gazette and Daily, York, Pa.,

## EDITORIAL

Tuesday Morning, March

### The Morality Of The Rand Corporation's 'Thinkers'

# How We Can 'Win' A Thermonuclear Conflict

By JAMES R. NEWMAN

#### Most Effective Posture

Do we need civil defense? The important thing is to fit civil defense into the large strategic program: "Counterforce" and "Credible First Strike Capability," to make sure we gain the most effective "posture" for "Preattack and Postattack Coercion."

Kahn summarizes his general notion of the most desirable "posture." We should have, he says, "at least, enough capability to launch a first strike in the kind of tense situation that would result from an outrageous Soviet provocation, so as to induce uncertainty in the enemy as to whether it would not be safer to attack us directly rather than provoke us. The posture should have enough of a retaliatory capacity to make this direct attack unattractive."



The Gazette and Daily, York, Pa., **EDITORIAL** Friday Morning, June 22, 1962

## Too Much Thinking About The Unthinkable

# The Military Scientists

By **JOSEPH BARRY**

(Special to The Gazette and Daily)

**Paris**—Sometime this month America will explode a megaton bomb in the Pacific stratosphere and Herman Kahn will publish another book on thermonuclear war, "Thinking the Unthinkable."

The prospect of the first has upset, of all people, our best allies, the British. The publication of the second, following on the heels of Kahn's first book, which an English science writer has called "thermonuclear pornography," seems bound to do the same.

A scientific friend, who has seen an advance copy of the Kahn opus, writes in a letter that some unkind reviewer will re-title it, "Reading the unreadable," though he himself believes it's worth the struggle.

As for America's explosion of a hydrogen bomb with the force of 1,000,000 tons of TNT, in order to test its effect on the Van Allen radiation belt, no voice has been more irate than that of Sir Bernard Lovell, head of the Jodrell Bank Radio Astronomy Station, on which, ironically, America depends for the tracking of its satellites.

"These proposals to make nuclear explosions in space," said Sir Bernard early in May, "arise from a small group of military scientists, unknown and unidentified to the world at large, who have persuaded their masters to make a series of huge gambles under the guise of defensive necessity."

"has the right to change the environment in any significant way without prior international study and agreement."

Then he concluded with this crushing contradiction: "The U.S. has done reasonably well in this respect by giving at least full advance announcements."

Prof. Lovell several days ago pointed out the obvious fact that "advance announcements" do not constitute "prior international study and agreement." Moreover, he reaffirmed his opinion that the American test might very well be a "sledge-hammer blow at the radiative environment of the earth."

## The Morality Of Kahn

What puzzles the British professor is the American scientists' failure to act according to their own professed principles of international consultation and scientific responsibility. For him it raises the moral question of scientific decisions, at least insofar as they affect the world at large.

Another Britisher, the scientific correspondent of The Observer, mused (early in May, too) about the morality of Herman Kahn, who, he said, "blandly discusses theoretical situations in which 20,000,000 casualties might seem 'acceptable,' world-destroying 'Doomsday Machines' as ultimate weapons in the weird calculus of deterrence (etc., etc.)"

To satisfy his own curiosity, the Britisher visited Herman Kahn in his home on the Hudson, where "he lives a thoroughly non-belligerent life." The writer found him somewhat changed "become more impress-

searchers as to where each drew "At one extreme, Kahn decided, Hindu who draws the line at killing. At the other, he quotes three science leagues, 'all bachelors,' who would the mankind-destroying Doomsday a possible deterrent weapon, 'but the line of a galaxy-destroying m

Kahn himself, you might be know, draws the line at destroying with thermonuclear weapons. "shouldn't do it," the British reporter he says.

Possibly this last principle has place in Kahn's new book. If so, a gap between the pacifist and game theorist, a considerable step taken toward reconciliation of more cold reason.

"This rapprochement is no place gracefully," Paul Weidinger, physicist and friend, has joined me toward the end of an eight-page tightly analyzing both camps. "In opposing parties seem to be brought together with their heels dragging and selves screaming. Namecalling, qu of context and distortions are de this battle.

"Equally important is that run a similar conflict are clearly be the other side of the iron curtain. hopeful signs. In more ways than may find that the realpolitik of scientific decision-makers and the cooperative of the moralists turn reconcilable in a marriage of con-

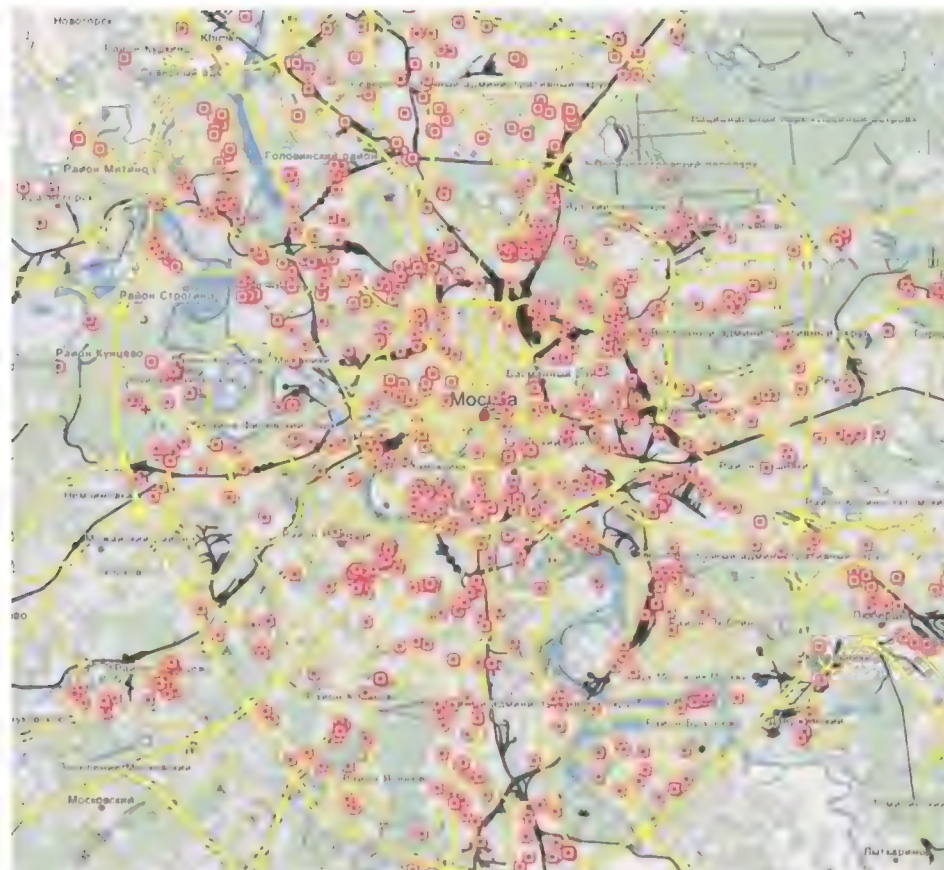
Early this month, American Professor S. Fred Singer surfaced from anonymity and replied to the British critic. In effect he claimed there would be no great damage done—and if there were, it would not be permanent. "No government," he agreed.

ed by moral arguments; first you see them, then you accept them, then you believe them."

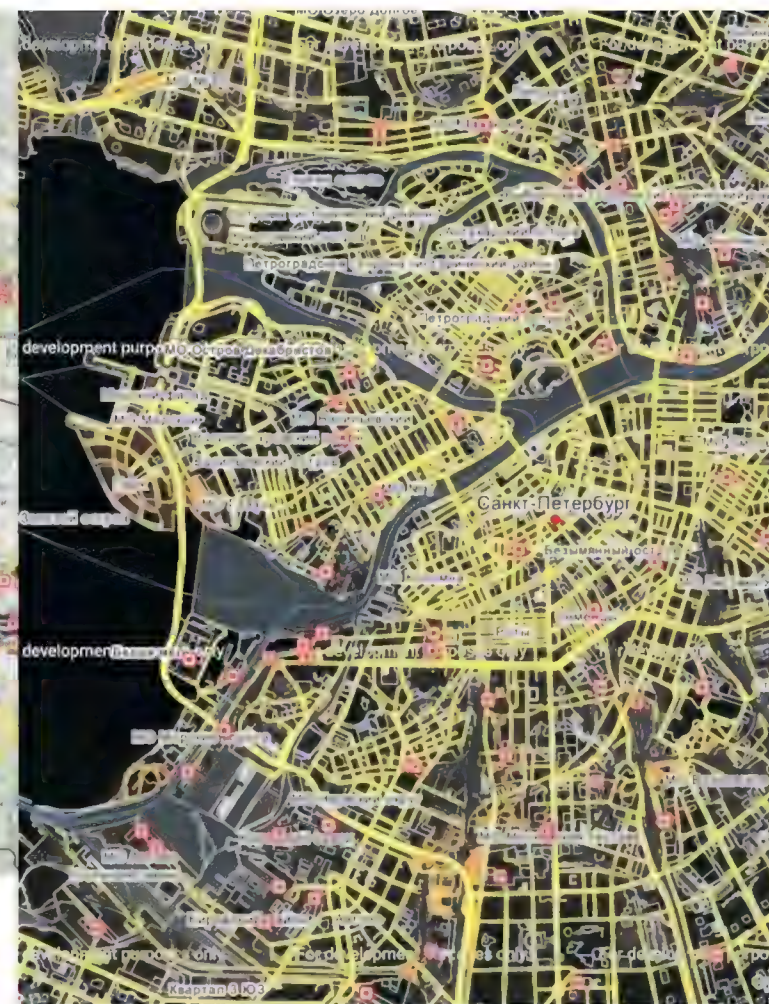
The weirdest story he heard from Kahn was the latter's inquiry among Rand re-

Weidinger, who is a consultant to the Defense Dept., concludes: "In this battle of ideas between both sides of the iron curtain encouraged. The least we may gain at most, a second chance . . ."





ABOVE: Moscow's nuclear shelters map  
RIGHT: St Petersburg's nuclear shelters map



<https://www.bloomberg.com/news/articles/2022-11-10/russia-quietly-checks-its-bomb-shelters-as-war-fears-spread>  
<https://www.bloomberg.com/news/articles/2022-11-10/russia-quietly-checks-its-bomb-shelters-as-war-fears-spread>

By Bloomberg News

10 November 2022 at 15:28 GMT

In the latest reflection of the Kremlin's expanding war effort, bomb shelters across Russia are being brought back to life after more than three decades of neglect since the end of the Cold War.

State workers are quietly checking basements and other protected facilities, repairing and cleaning installations not used since the Soviet era, according to people familiar with the efforts.

<https://www.mirror.co.uk/news/world-news/bomb-shelters-readied-moscow-russians-28684887>  
<https://www.mirror.co.uk/news/world-news/bomb-shelters-readied-moscow-russians-28684887>

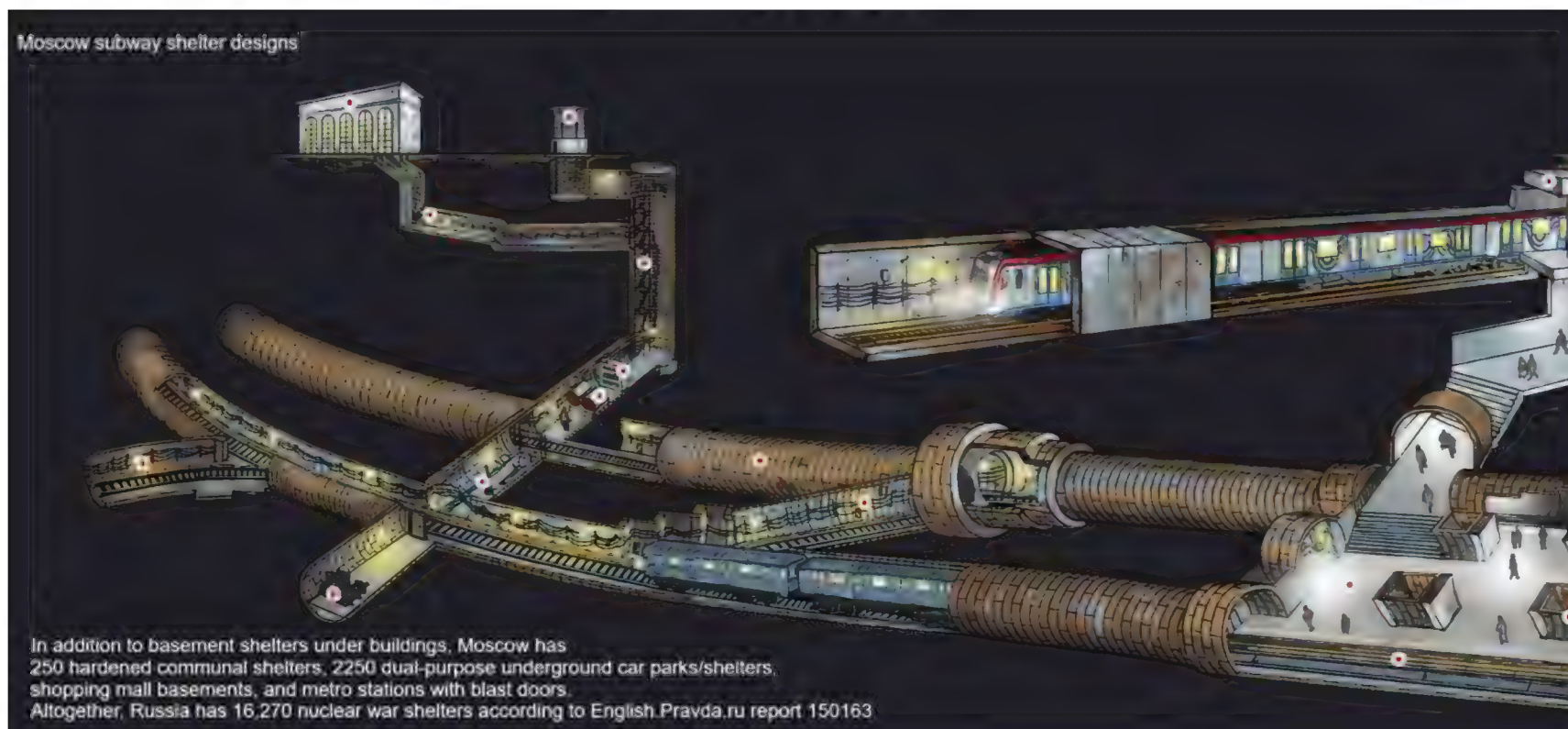
By Will Stewart  
Russia Correspondent  
Graeme Murray  
News Reporter  
16 41, 8 Dec 2022

At least 60 bomb shelters have been equipped - often underground car parks - in Moscow, say reports.

Inspections are underway of potential shelters in the city, reported iStories and Moskvich magazine

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Срок 20 дней.

8/1-53 г.

*В. Молотов*

Министр  
путей сообщения  
СССР

1/XI 1952 г.

№ 007806пр

К о п и я  
Сов. Секретно

В СОВЕТ МИНИСТРОВ СОЮЗА ССР

РАСЕКРЕЧЕНО

Во исполнение Постановления Совета Министров СССР от 10/XI 1952г. 2699-1007сс Министерством путей сообщения разработан и представляется утверждение технический проект и генеральная смета на спецустройства ПВО по приспособлению и оборудованию Московского метрополитена под бомбоубежище для населения.

Проект предусматривает оборудование линии метрополитена по 1 этапу работ: защитно-герметическими и герметическими затворами, фильтровентиляционными установками, санитарно-техническими узлами, водоснабжением, энергоснабжением, аварийным освещением, связью, радиовещанием и защитными тюфяками.

Под убежище используются тоннели и станции имеющие естественную защитную толщу грунта от однократного действия ФАБ-2500, по следующим линиям метрополитена глубокого заложения:

Кировско-Фрунзенский диаметр	- 2 км
Горьковско-Замоскворецкий диаметр	- 9,6 км
Покровско-Арбатский	-12,0 км
Кольцевая линия	-19,3 км

Общее протяжение трассы линии Метрополитена глубокого заложения используемых под массовое бомбо и газоубежище составляет 42,9 км.

Суммарная вместимость тоннелей и станций по всем линиям - 822 тыс. человек.

Для защиты тоннелей и станций от удара взрывной волны и от проникновения ОВ предусматривается установка защитно-герметических затворов.

I ask you to consider the technical project by the Ministry of Railways for work equipment of the Moscow Metro for mass shelter and submit your proposals to the Council of Ministers of the USSR

The term is 20 days

8/1-53 g.

*В. Молотов*

Minister  
of Railways S  
SSR

1/XI 1952

№ 007806pr

TO THE COUNCIL OF MINISTERS

In pursuance of the Resolution of the Council of 10/XI 1952. 2699-1007ss, the Ministry of Railways and submitted for approval a technical project and special devices 1VO for the adaptation and equipment for a bomb and a gas shelter for the population.

The project provides for the equipment of the 1 stage of work: protective-hermetic and hermetic ventilation installations, sanitary-technical units, water supply, emergency lighting, communications, radio protective mattresses.

Tunnels and stations with a natural protective action of FAB-2500 are used for shelter, and deep-laid metro lines:

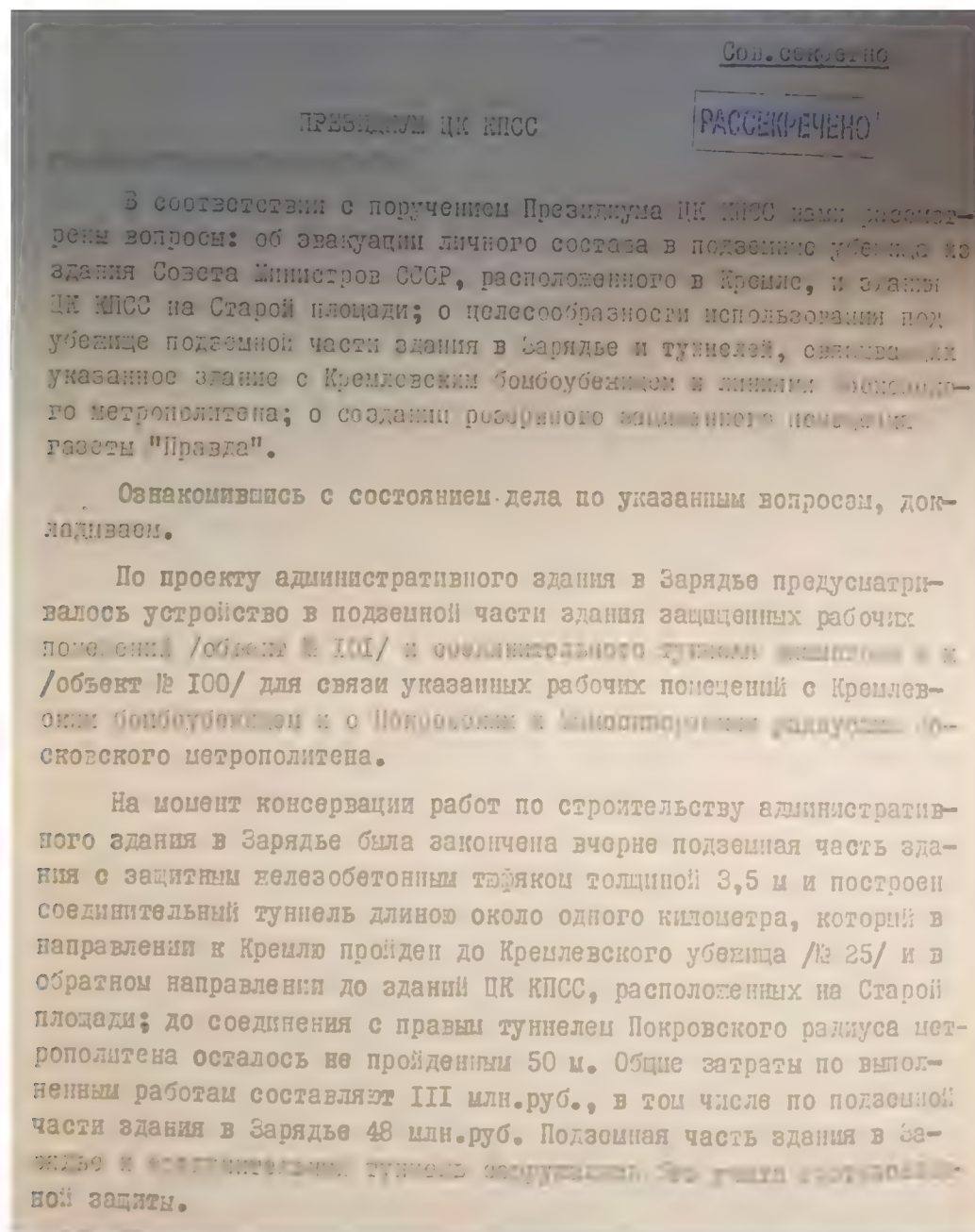
- Kirovsko-Frunzensky diameter
- Gorky-Zamoskvoretsky diameter
- Pokrovsko-Arbatsky
- Ring line

The total length of the route of the deep-laid used for mass bomb and gas shelter is 42.9

The total capacity of tunnels and stations is thousand people. **[Hence, Russian metro shelter]**

To protect tunnels and stations from the impact of a kania OV provides for the installation of protective

**SOURCE: Dmitry Yurkov, <http://podzemnaya>**



## TRANSLATION

## PRESIDIUM OF THE CENTRAL COMI

In accordance with the instructions of the Presidium of the CPSU, we have considered the following personnel to underground shelters from the building of the Ministers of the USSR, located in the Kremlin, and the Committee of the CPSU on the Old Square; on the underground part of the building in Zaryadye connecting the specified building with the Kremlin of the Moscow Metro; on the creation of a back newspaper Pravda.

Having familiarized with the state of the case on

According to the project of the administrative building a device in the lower part of the building of project 101/ and a connecting tunnel with a diameter of connecting these workrooms with the Kremlin, Pokrovsky and Zamoskvoretsky radpuses of the

At the time of conservation of the construction in Zaryadye, the underground part of the building with a concrete mattress 3.5 m thick was completed in a tunnel about one kilometer long was built, which to the Kremlin, it was passed to the Kremlin Shelter /number 25/ in the direction to the buildings of the Central Committee on the Old Square; 50 m remained to be passed before the tunnel of the Pokrovsky metro radius. The total amount to III million rubles, including 48 million rubles for the underground part of the building in Zaryadye. The underground building in Zaryadye and the connecting tunnel were conserved for the anti-atomic protection.

Metro-2 SOURCE: Dmitry Yurkov at <https://post.sovnet.ru>

Unofficial Russian video on the secret Russian nuclear shelters from Russian Urban Exploration, titled "Проникли на секретный Спецобъект Метро!" = "We infiltrated a secret special facility of the Metro!":



Проникли на секретный Спецобъект Метро! ФВУ



Диггеры залезли в Бункер Военного Завода! Нашли Ящ...



Гермозатвор



Как работает гермозатвор в метро. Станция "Универси...



Как работают Эскалаторы и Гермозатвор Метро! Изнут...



Диггеры Нашли Секретный Объект СССР! Подземная Л...





Saturday, September 30, 1978, The Evening Sentinel, Carlisle, Pa. -- 15

# Need shelter for fallout?

By DONALD C. BROWN JR.  
United Press International

**SOURCES SAY** the Russians have built hardened bomb shelters under most large apartment buildings in Moscow, Leningrad and Kiev and have a contingency plan to evacuate the population of these cities to collective farms within 72 hours.

The Soviet civil defense system even includes an estimated 100 hours of instruction for Soviet school children on the effects of nuclear weapons and civil defense procedures.

But while American civil defense officials are pleased with the new attention their program is receiving from the Carter administration, not everyone believes it is necessary or wise to increase nuclear preparedness.

Carter claims the United States and the Soviet Union, with

Critics claim the United States and the Soviet Union, with their nuclear arsenals, have "assured mutual destruction" and no adequate protection is possible.

Other skeptics say new emphasis on civil defense would mean a return to the atomic fears of the 1950s and 60s and increase the global tension that could actually lead to a nuclear war.

*ABOVE:* Moscow Metro and Metro-2 (secret nuclear subway) horizontally swinging blast doors take only 70 seconds to shut, whereas their vertically rising blast doors take 160 seconds to shut; both times are however far shorter than the arrival time of Western ICBMs or even SLBMs which take 15-30 minutes by which time the Russian shelters are sealed from blast and radiation! In times of nuclear crisis, Russia planned to evacuate from cities those who could not be sheltered, and for the remainder to be based in shelters (similarly to the WWII British situation, when people slept in shelters of one kind or another when there was a large risk of being bombed without notice, particularly in supersonic V2 missile attacks where little warning time was available).

Friday, October 2, 1959 Appleton Post-C

## Governmental Responsibility

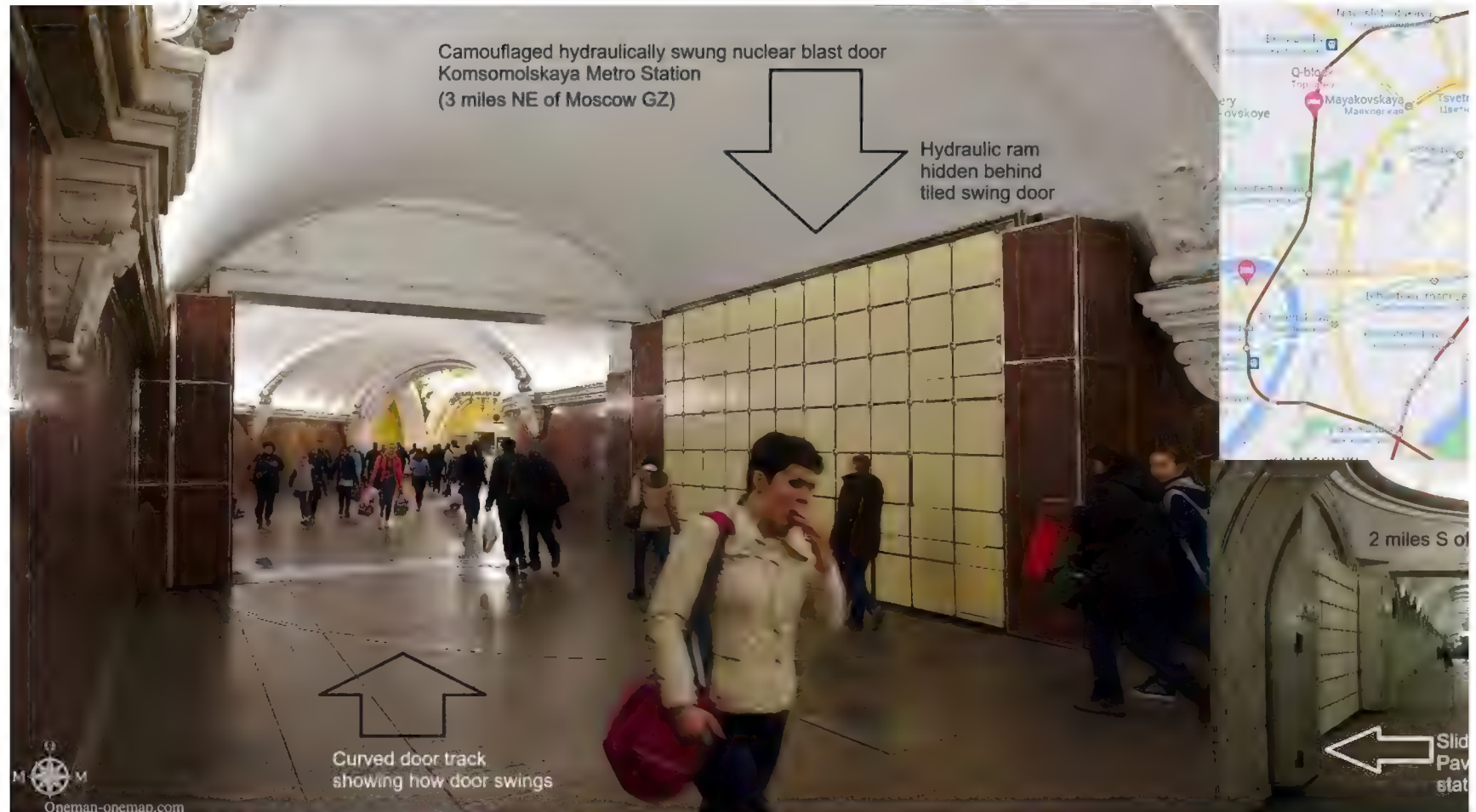
# Evacuation, Shelters Two Ways Save Lives During Nuclear A

Madison — There are only two ways to save lives in a possible nuclear war—evacuation or in shelters, about 100 men and women at a non-military defense seminar, sponsored by the Carnegie foundation, were told here Thursday.

shelters is unknown, but USSR propaganda indicates a shelter program is underway, he said.

It is no longer possible to clearly distinguish between war and peace, with the Russo-U. S. cold war and local military actions obscuring a clear definiti said. In this tary defense, defense, becoming effort, he a Non-military application an resources — fu three areas to ilian populatio ed. Under res





LEFT: Mayakovskaya blast door

<http://v2.travelark.org/travel-blog-entry/joelmeeker/42/1503596534>

It's a bit surprising that this omits the fact that the Moscow Metro is a nuclear bomb shelter. There are huge blast doors everywhere and at many stations it's significantly deeper than Paris or New York. It's a bit surprising that this omits the fact that the Moscow Metro is a nuclear bomb shelter. There are huge blast doors everywhere and at many stations it's significantly deeper than Paris or New York.

- <https://news.ycombinator.com/item?id=27264521>  
<https://news.ycombinator.com/item?id=27264521>











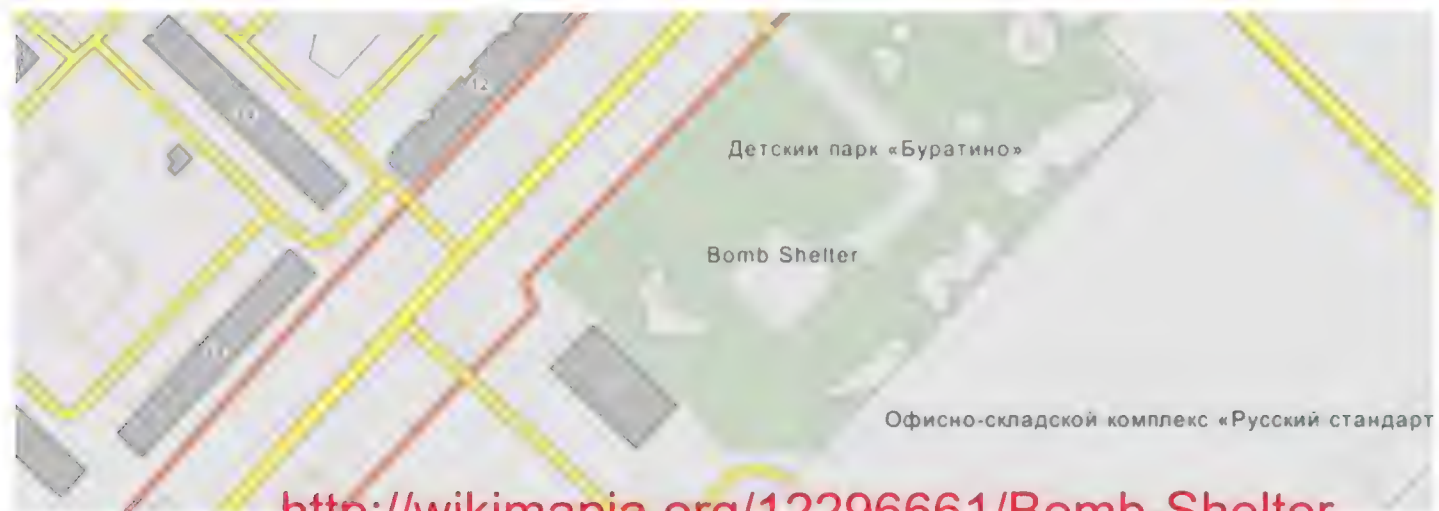


Moscow  
nuclear  
shelter

Nearby cities:

Coordinates: 55°38'29"N 37°22'12"E

<http://wikimapia.org/16031767/Bomb-Shelter>  
<http://wikimapia.org/16031767/Bomb-Shelter>



<http://wikimapia.org/12296661/Bomb-Shelter>

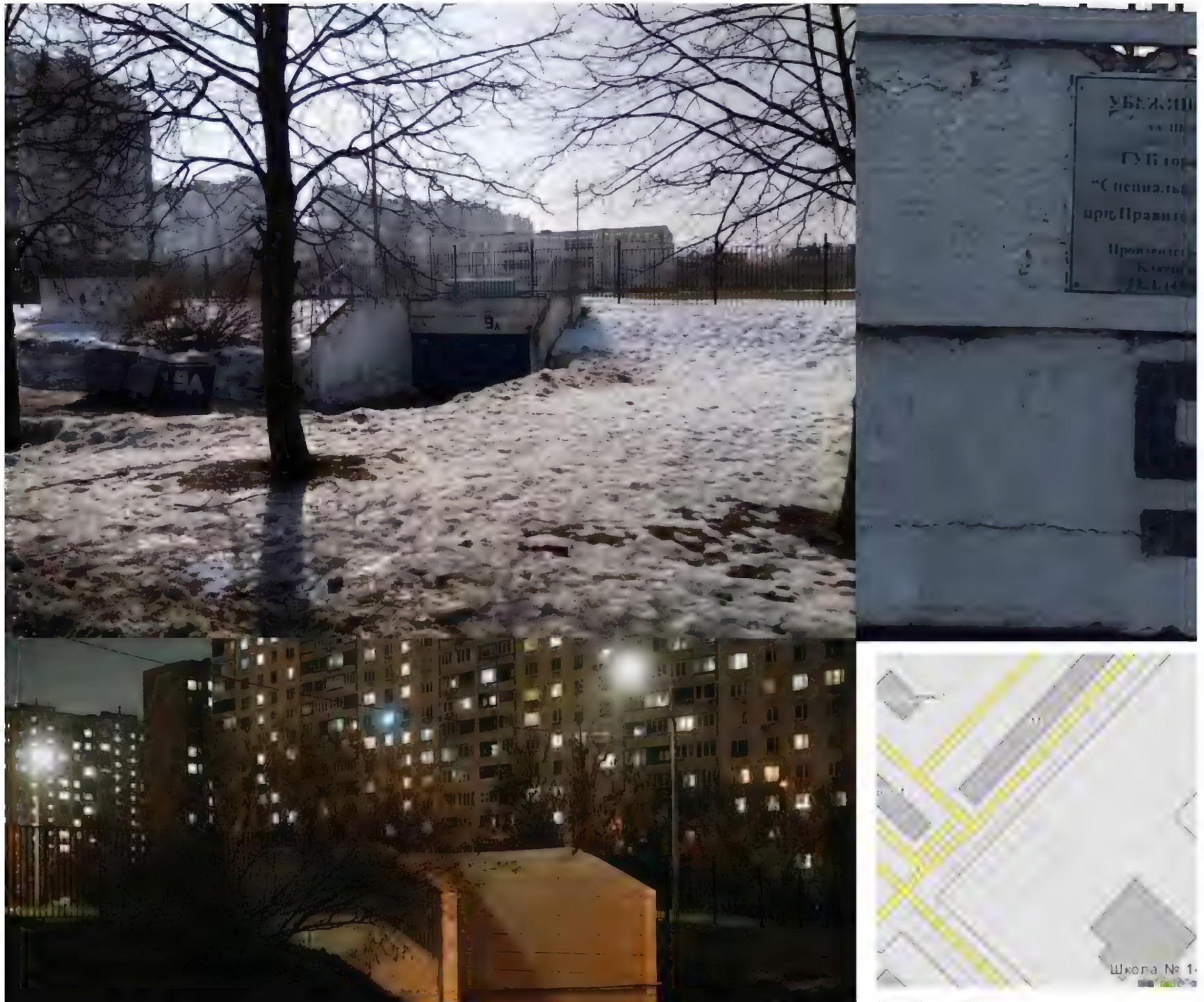
Nearby cities:

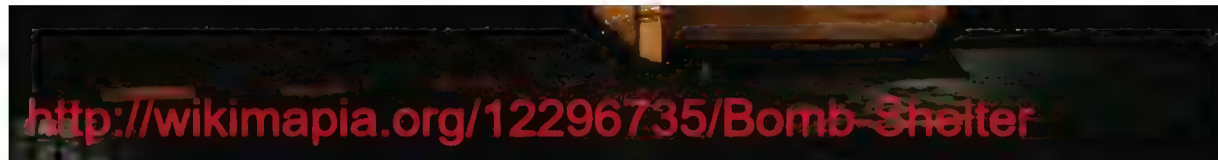
Coordinates: 55°38'9"N 37°21'49"E

**Bomb Shelter (Moscow) RUSSIA**







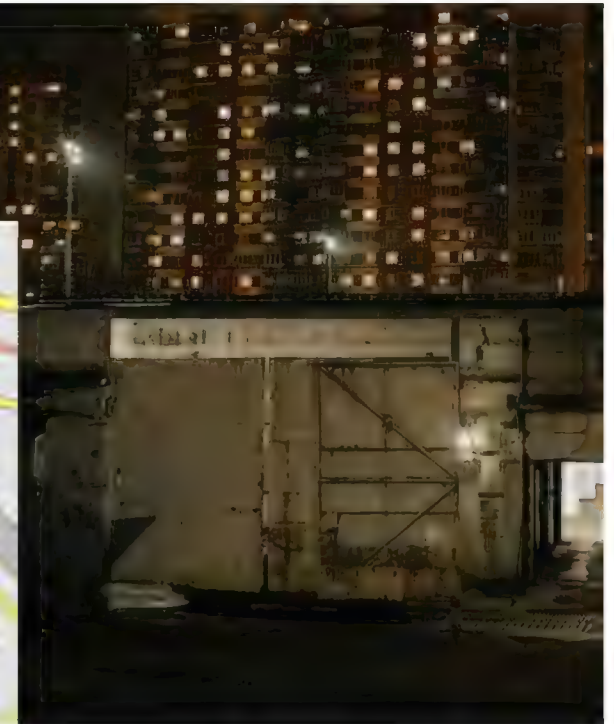


Nearby cities:

Coordinates: 55°38'23"N 37°20'54"

Moscow nuclear shel

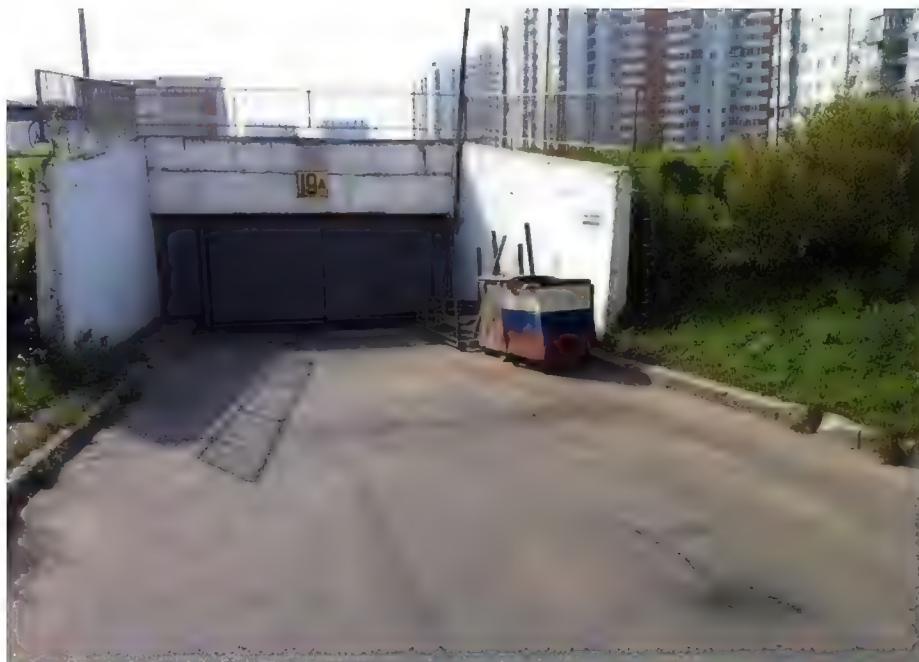




Nearby cities:

Coordinates: 55°38'44"N 37°20'46"E

Moscow nuclear shelter <http://wikimapia.org/21940941>.



<http://wikimapia.org/12296701/Bomb-Shelter>



Nearby cities: **Moscow nuclear shelter**

Coordinates: 55°38'35"N 37°20'32"E



Coordinates: 55°45'28"N 37°25'15"E



Dual purpose underground car park and nuclear war shelter

Moscow nuclear shelter





# Bombshelter (Moscow)

Russia / Moscow / Moscow

Secret Moscow shelters (no photos available) indicated on leaked plans



Nearby cities: <http://wikimapia.org/22060790/Bombshelter>  
Coordinates: 55°43'29"N 37°31'49"E



Nearby cities:  
Coordinates: 55°43'32"N 37°31'57"E



Nearby cities: <http://wikimapia.org/4960864/School-bombproof-shelter>  
Coordinates: 55°41'8"N 37°35'14"E



Nearby cities:  
Coordinates: 55°46'30"N 37°35'35"E



A map of bomb shelters in Moscow channels #mobilization #osir



<https://twitter.com/nigro464>

Bomb Shelters Moscow – St. Petersburg Published <https://cybershelters-mos>

<https://novayagazeta.eu/articles/2022/12/15/shelters-to-apartment-blocks-malls-en-news>

NEWS  
SOCIETY  
Shelters to be set up in Moscow region's apartment blocks

02:42 PM, 15 December 2022

Moscow region authorities will organise shelters in apartment blocks, regional official Sergey Poletykin said at a meeting





According to him, shelters in shopping centres and high safety for up to 15 million people. He also said that the street signs with shelter addresses and directions "to av

In November, signs pointing to the nearest shelters were placed on buildings in Novokuznetsk. The shelters are mainly placed in residential blocks. Moreover, Deputy Mayor of Belgorod Valentin Dmitriyev said that they had created an interactive shelter map and hang signs around the city,



4 *The Daily Telegraph, Tuesday, August 11, 1981*

# AMERICA DEFENDS SECRECY OVER BOMB DECISION

By FRANK TAYLOR in Washington

**T**HE Reagan Administration yesterday brushed aside suggestions that there should have been full consultations with Nato before the decision was taken to provide the neutron bomb.

Mr Caspar Weinberger, Defence Secretary, said in a television interview that there was "no particular reason" why the Allies should have been consulted

first.

As there was no intention of deploying the weapon in Europe "to do anything with it but stockpile it" in the United States, the question of consultation did not arise.

Mr Weinberger's seemingly peremptory reaction followed some confusion among official spokesmen over whether or not the European Allies had been told about the neutron decision.

At first, Mr Larry Speakes, the Deputy White House Press Secretary, said that they had been consulted. Less than 24 hours later, he reversed himself and said that the news had leaked out before the allies could be notified.

Yesterday, officials were placing heavy emphasis on the initial reaction from European Governments that, as the neutron bombs would be stockpiled in the United States, their manufacture was "an internal American affair."

But critics of the decision pointed out that the weapon is meant almost exclusively for use in the European theatre and that it would sooner or later have to be deployed on European soil.

These critics see the Weinberger argument as part of a larger "smokescreen" thrown up by the Reagan Administration in an attempt to soften anti-neutron sentiment abroad.

They look with a exceedingly

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sceptical eye on "leaks" from the State Department that the neutron decision was strongly opposed by Mr Haig, Secretary of State, who, according to some recorts, "Went head to head" with Mr Weinberger over the issue.

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BRITAIN'S second nuclear test explosion which took place on May 31, 1957 in the Central Pacific. The picture was taken from a Royal Navy ship.

# HOW WE WOULD FARE IF WAR BROKE

INCREASED WORLD tension has raised the haunting question of Britain's feeble civil defence anew. Even before Russia invaded Afghanistan, a new attitude to public survival in nuclear war had started in local and national government.

The old "don't worry about it" approach is on the way out. Early this summer the Government will announce its new, more open Home Defence Policy and a revised version of Protect and Survive — the Govern-

ment booklet that tells how to survive a nuclear holocaust — will be put on sale.

What exactly would happen in a nuclear war? The Courier has spoken to the people who will be given executive power to completely control Kent and East Sussex in such an event — the emergency planning staff at Kent and East Sussex County Councils.

But first it is important to remove two widely held fallacies about nuclear war. If it happens, martial law will not be declared and there will not be a military dic-

tatorship. Everything is geared for a civil administration.

Nuclear attack will not mean complete destruction. Nobody knows how many bombs would fall on Britain or how destructive they might be. But the best educated estimates conclude that 77 per cent of the population would survive — if they take proper basic precautions.

And in an area like West Kent and East Sussex, where there are no likely targets, the survival rate is

## Scenario for nuclear HOME TOWN DEFENCE WILL BE UP TO YOU

A WORLD LEADER dies and Russia begins overtly aggressive moves in central Europe. There now follows a period of international tension lasting three to four weeks with the nations trying to avert war.

Home Defence planners are now not so sure about this time span — it could be shorter or it could lead first to a conventional war in Europe. Even more frightening, there could be an instantaneous nuclear attack without any real warning.

If the position deteriorates a "war crisis situation" is entered lasting two to three days with open measures taken to prepare for war. If no detailed plans have been made and no information already given to the public about how to survive, it will come now.

The public will be told that there are no shelters. A version of Protect and Survive will be delivered to each house, it is hoped, but there will be Government broadcasts on television and radio and articles in newspapers telling people what to do.

They will be told to select a fall-out room in their house and build within this an inner refuge for pro-

By IAN TODD

tection from radiation. They will need at least 14 days supply of food and water.

If negotiations to avert nuclear war fail, or if the conventional war escalates, Russian rockets will be fired at Britain.

Three minutes before the bombs fall a wailing siren will give warning to take shelter. The bombs are likely to be one or two megatons — a megaton being equivalent to one million tons of high explosive.

### Targets

Although it is unlikely that they will be fired directly at West Kent or East Sussex, the area is surrounded by potential targets — Gatwick Airport, Dungeness Power Station, Portsmouth, Chatham and, of course, London.

Most people in this area will hear one or more bombs exploding followed by a series of bangs and vibrations as the pressure waves pass over. People caught in the open could be temporarily blinded by the flash and knocked over by the shock waves.

This area should escape the devastation caused by blast, intense heat and hurricane force winds generated by a nuclear explosion. But, depending on the size of the

executives will be supported by the police and military.

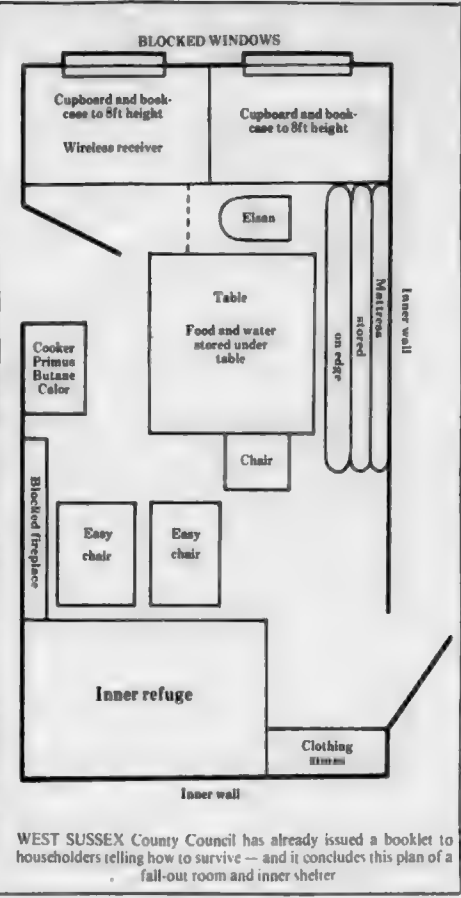
Both the Kent and East Sussex emergency planning staff are prepared for an exodus of people from London immediately before a nuclear attack.

The staff from both councils agree that there will be a civil order problem, with "inevitable elements of food rioting and looting".

East Sussex expects its population to double and both counties expect to provide accommodation for these extra people in public buildings. It is also possible that some will be billeted with residents.

East Sussex has prepared a model community warplan in conjunction with Newick Parish Council but it remains a political decision whether this plan will now be issued to all the county's wards and parishes — or whether distribution should wait until war looks imminent.

The plan covers all aspects for the community to get through those first two years — conservation and distribution of food, water, fuels, clothing, shelter, medicine.

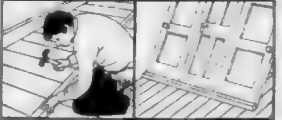


WEST SUSSEX County Council has already issued a booklet to householders telling how to survive — and it concludes this plan of a fall-out room and inner shelter

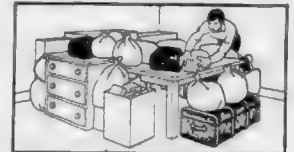
### Now the Inner Refuge

Still greater protection is necessary in the fall-out room, particularly for the first two days and nights after an attack, when the radiation dangers could be critical. To provide this you should build an inner refuge. This too should be thickly insulated with materials to resist the radiation, and should be built away from

1. Make a "lean-to" with slapping doors (door) against the inner wall. External door should be closed. Use a length of wood along the floor. Seal the protection of bags or boxes of earth or sand — or books, or even clothing — on the slope of your refuge, and anchor these also against slapping. Partly close the two open ends with boxes of earth or sand or heavy furniture.

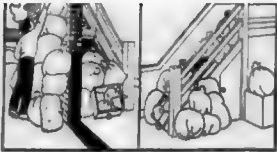
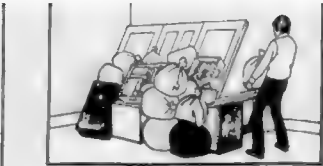


2. Use tables if they are large enough to provide you all with shelter. Surround them and cover them with heavy furniture filled with sand, earth, books or clothing.



3. Use the cupboard under the stairs if it is in your fall-out room. Put bags of earth or sand on the stairs and along the wall of the cupboard. If the stairs are outside, strengthen the wall outside in the same way to a height of six feet.

## On today's Beta Coupé v



THESE TWO pages from *Protect and Survive* — the official Government booklet telling civilians how to survive a nuclear attack — give instructions about building the inner refuge. The booklet will not be issued until war seems imminent.



...rooms, their location and the weather, the area will be hit by radioactive fall-out about ten minutes after the attack.

The warning sign for fall-out is three loud bangs or three whistle blasts. In the intervening ten minutes, householders are advised to put out any small fires caused by the explosion, gather any extra supplies and then get into their inner refuge.

People caught in the open during the actual attack should lie flat, cover all exposed skin and put their hands over their eyes. If they can get home in the next ten minutes they should do so, if not take cover in the nearest building.

The radioactive fall-out contains 15 per cent of the energy from the nuclear explosion. The rest quickly goes in the blast (45 per cent), heat flash (35 per cent) and initial radiation (5 per cent).

# your own personal touc

No two Lancia drivers are ever the same. You all have your own impeccable, but quite different tastes and preferences. That's why, with every Beta Coupé that's registered and delivered on or by May 3rd, we give you a budget of £200 to spend on your new car. You can choose from absolutely any of today's vast range of car accessories to make your Lancia Beta completely your own. Sun roof, stereo radio/cassette, black vinyl roof; whatever you choose, you'll know that your Beta Coupé will be unlike any other on the road

All Lancias are now protected our new 6 year Corrosion Prevent Warranty.

And when you take delivery of your new Lancia Beta Coupé before May 3 the routine retreatment checks after 23 and 42 months come completely fr of charge. Because naturally we'd like

## ...and v

to feel you're still driving the smartest on the road. Of course this warranty is

THE SUNDAY TELEGRAPH JANUARY 5 1992

7

# For sale: nuclear-proof res. deep in the coun

ONCE they were among the  
most secret places in Britain.

by Christy Campbell Defence Correspondent



**Don Warden selling bunkers** Photograph: Nick Rogers

Definitely not for sale is the Home Office's own parallel network of 22 super-bunkers.

Nor is Whitehall yet soliciting bids for the network of bomb-proof tunnels that riddle central London.

But London's underground citadels are small compared with those under Moscow.

A KGB officer revealed last week that the Kremlin is linked by an underground railway to a vast nuclear shelter in the suburbs, with cinemas, theatres and luxury apartments — said to be stuffed with enough food to keep 120,000 people alive for 25 years. No doubt that, too, will soon be for sale.

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*The Daily Telegraph, Monday, May 18, 1981* **15**

# BOOKS FOR BRITISH CLASSROOMS FROM RUSSIA WITH LOVE

By **JOHN IZBICKI** *Education Correspondent*

**A** MAJOR Russian propaganda campaign has been launched in schools throughout the country. Evidence disclosed to me yesterday suggests that teachers are being bombarded with books, pamphlets and leaflets, all free.

Parcels postmarked Watford, Herts, contain books written by the chief of the influential international department of the Russian Communist party and a 202-page volume called "Disarmament: Soviet Initiatives," by President Brezhnev.

**CAMBRIDGE**  
**EX COLLEGE**

Earlier this year, teachers received a letter signed by Mrs Victoria Cherneyeni

## Titles available

Among the titles are: "Privileged Class (Children): Soviet Demographic Work" by Irene Ouchir; "Young People in the Soviet Union"; "Invincibility, the Little Movement" and "The Vital Force of Leninism" by Boris Ponomarev, the central committee leader responsible for relations with Communist parties, and a hard-line Stalinist.

Sports teachers might be interested in a book "1980 Olympics" which is the journalistic story of the "What? Why? When? How?"

There is a series of general books on the various aspects of Russian as well as a series on science. There is even a Chinese work—"Injustice Behind the Wall."

Novosti has doubtless on its list of "subscribers" Czechoslovakia, for it has been receiving separate cover — propaganda material from Orbis, a London-based news agency. The range from "USA and Rights" to "Chile: an Invitation and a Warning."

## Protest to Boycott

Mr Michael Ivens, of Aims of Industry, the education campaigning for

## EX-COLLEGE MASTER DIES

**T**HE former master of Downing College, Cambridge and a distinguished classical scholar, Prof. William Keith Chambers Guthrie, has died, aged 74.

Educated at Dulwich College, he went up to Trinity College, Cambridge, as a Scholar in 1927, became a Bye-Fellow of Peterhouse in 1930 and remained at the college until 1957.

### Archaeological search

with an address in south-west London, announcing the new "free service."

It stated: "We are introducing a new service for schools and organisations providing them with a free subscription to Novosti Booklets which provide information about Russia. We intend to send approximately 40 booklets per year.

Although Russian propaganda has found its way into British schools before, the present campaign outreaches any of the previous infiltrations. With text books at a premium and many schools unable to afford them, a free service of this kind finds an easier entry.

sation campaigning to enterprise in industry written to Dr Rhodes Under Secretary for Education to protest at the Russian propaganda action and asking the Department to intervene

He also wrote to Mr. Iveneyi to ask for a Russian schools "to which could send material about enterprise and so on," he had expected, the result "a resounding silence."

Yesterday, Mr. Iveneyi wrote me: "It is not merely for British schools to take kind of material; it raises the whole question of reciprocal information and propaganda."





# Refuge from the nuclear storm

AT THE foot of 13 concrete steps in a garden near Tunbridge Wells in Kent there is a nine-inch thick steel and concrete door, and beyond that another equally massive portal. Behind the doors is one of the most depressing rooms in Britain — a room that the owners hope they will never have to use. This is the ultimate nuclear shelter.

Two years ago I wrote of the Government's strategy for civil defence in the event of World War III. The preparations then, as now, were largely based upon an assumption that there would be a two- to three-week build-up of international tension during which time a booklet called "Protect and survive" would be printed and distributed.

Little has changed, and the entire Civil Defence budget (below 50 pence a head) is channelled towards local authorities who can claim 75 per cent. of the cost of setting up their wartime command control centres.

Mr Alistair Watts, publisher of the monthly magazine PROTECT AND SURVIVE, complains: "They are allocating a little money to aid survivors of nuclear war, but none for aiding people to survive it."

About 500 families in Britain have so far decided to install a shelter.



William and Sandra Donson and family in the nuclear shelter beneath their house at Coleford, near Bath.

"When I started to look at what other countries were doing in the way of protecting their citizens from the effects of nuclear war I was horrified. In Switzerland, for instance, every house, school, factory and cafe must have adequate shelter space to protect people if a bomb goes off."

The people of Moscow would take refuge in the deep and well-equipped underground stations which can be immediately isolated from the outside world when massive steel doors are closed. In Peking it would take only a matter of minutes for every citizen to reach the elaborate

willing to consider a mortgage extension to cover costs.

The trouble is that few people, even surveyors, are fully aware of the needs of a fallout shelter. The Federation of Master Builders has just published a booklet (price £1) which sets out to guide the uninitiated towards the right shelter.

The guide helps decide which types of prefabricated shelters are likely to last for 30 years or more, some materials being particularly susceptible to water.

The guide recommends that the shelter should have a decontaminating

One of the finest shelters I have seen was built near Tunbridge Wells at Langton Green. The Institute of Cultural Research teamed up with its neighbour, Mr Richard Rieu, county court registrar for Tonbridge, to create the ultimate protection, with even a degree of comfort.

The shelter, constructed from a dozen massive steel and concrete sewage pipes, nine feet in diameter, cost £20,000 to install but it could accommodate about 20 people.

Thirteen steps lead down to the first nine-inch thick steel-and-concrete

Mr Watts believes that figure will double during the next 12 months, and already at least 25 British firms are marketing shelters.

The first thing to understand is that there will be life after a nuclear war, whatever preparations we make. In his book,\* published last month, Magnus Clarke estimates that 33 million British people would survive a nuclear war, but only 10 million would remain alive for more than a year.

People considering a shelter must decide whether they want one that will withstand both blast and fall-out. Someone living on the Scilly Isles or the side of a Welsh mountain would be most unlikely to suffer the effects of blast and so a comparatively simple shelter to protect against fall-out would suffice.

One man who takes the threat of nuclear war very seriously indeed is Mr William Donson, a builder, who has created a prototype of his new shelter at his own home at Coleford, near Bath, Avon, which Pearsons are now offering for sale at £79,500. The house has six bedrooms and grounds of about one acre.

shelters which are themselves connected to a network of escape tunnels.

The shelter, which costs about £13,000 to build, has room for nine people with comfort. Mr Donson has now launched a new company, Sandon Nuclear Fallout Shelters.

"The cost works out at around £1,500 per person, but a much larger shelter is proportionately less expensive," said Mr Donson.

The shelter, 14 feet below the ground, is approached by steps from the children's playroom. It measures 11ft x 11ft, and is 9ft high. A massive two-ton door seals the entrance. Inside the family is already stocked with bottled water, canned food, medical equipment, radio and radiation detection equipment, and dry toilet facilities. There is an emergency exit, and more than one air filtration supply. Pick and shovel are provided, in case both exits are blocked by rubble after the crisis.

Unless you are planning to build your shelter within 6ft of your house or close to public services there are no planning restrictions, and most building societies have been

shelter should have a decontamination area totally separate from the main living area, where shoes and clothes can be removed. There should also be more than one exit, and a mechanical means of opening the door (i.e., by sliding) in case the debris outside prevents escape.

The size of the shelter should be sufficient, says the federation, to allow five hours worth of free air without using the air circulatory system. In that way the inhabitants can survive even if a fierce fire is raging above.

The Home Office itself has also just issued an official guide for do-it-yourself nuclear shelters. The large technical book costs £5.50 from HMSO bookshops and there is also a 50p booklet giving basic advice.

Four types of shelter are described, ranging from rather flimsy erections made of household materials to more substantial purpose-built protection.

Shelters have few uses other than as protection from war. One that has evolved in recent months however is that of wine cellar, the temperature being perfect.

door which opens on to the decontamination area. Then another equally huge door opens into the main body of the shelter. The stairs down to the entrance are deliberately not built in a straight line so that the effect of blast is lessened.

The interior of the shelter has bunk beds, hand-cranked air and generator machinery, dry toilets, food storage areas under the floor, and radio equipment with a plentiful supply of batteries. There are also emergency air supplies.

It has been calculated that people taking refuge within would be unharmed if a one-megaton bomb fell only one mile away.

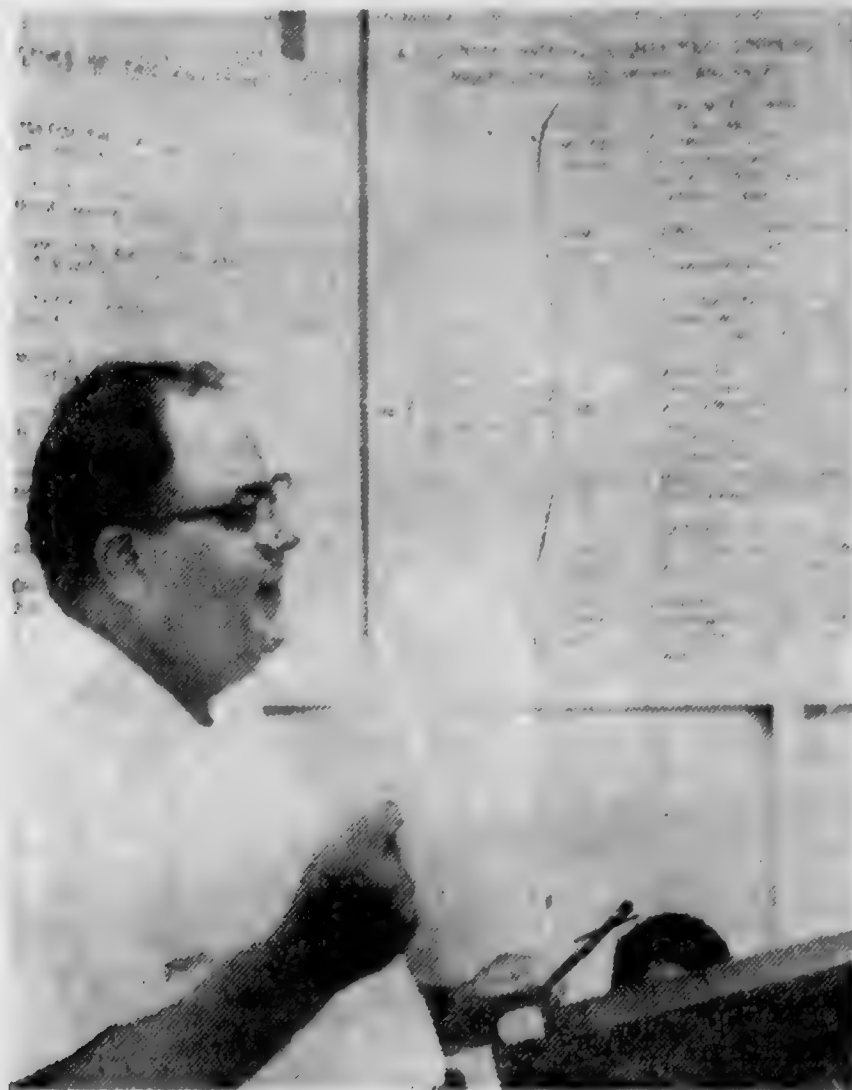
Mr Ivan Tyrrell, an officer with the Nuclear Protection Advisory Group, said: "For an outlay of £10,000 million the Government could provide shelters for everyone — vastly less than is being spent on some weapon developments."

It is all a gloomy topic for consideration during a Christian festival.

\* "The Nuclear Destruction of Britain" by Magnus Clark, Croom, Helm (£11.95).



30-E THE HARTFORD HERALD Thursday, May 14, 1964



—Associated Press Wirephoto

## Dr. Strangelove's Mentor

... Dr. Kahn thinks the 'unthinkable'

By RICHARD WHALEN  
HARMON - ON - HUD-  
SON, N.Y. — (AP) — Her-  
man Kahn, who contends a  
doomsday machine could be  
built, now runs a "think fac-  
tory" where scholars ponder  
and debate nuclear war.

"We think about the un-  
thinkable," Kahn likes to say.

His staff of 25 do their  
thinking in sylvan seclusion  
high above the Hudson River  
at the Hudson Institute. This  
year it has nearly one million  
dollars in federal contracts,  
mostly for advice on nuclear  
strategy.

Kahn, a rotund, bespecta-  
cled dynamo who speaks at  
breakneck speed to keep up  
with his thoughts, is a physi-  
cist-mathematician turned  
philosopher.

A doomsday machine, if  
you didn't know, is a super-  
nuclear bomb buried deep in  
the ground and powerful  
enough to blow up the whole  
world. It would be set to go  
off by computer under a giv-  
en set of circumstances — for  
example, if another country  
destroyed the United States  
by atom bombing.

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# 'Think Factory' Gets \$1 Million From the U.S.

*The man who postulated the doomsday machine and inspired "Dr. Strangelove" now runs a "think factory" for the government, thinking about the unthinkable. A look at Herman Kahn and his group of thinkers.*

★ ★ ★

KAHN is opposed to doomsday machines. But seven years ago he declared it's theoretically possible to build one. His purpose: to provide a ridiculous extreme as an antidote to overly eager militarism.

"It's the best deterrent you can think of," he says, "but nobody wants one . . . the goal is controlled deterrence."



PAGE FIVE

THE VANCE

# Comfort for Optimists: Nuclear War Wouldn't Be an 'A

HERMAN KAHN

Last Friday, *The Sun* devoted all of Page Five to excerpts from Herman Kahn's provocative book about nuclear war, *Thinking About the Unthinkable*. In response to requests from readers, further extracts appear today and tomorrow.

Mr. Kahn is director of New York's Hudson Institute, a private corporation which specializes in theoretical studies of thermonuclear war for the U.S. Defence Department. His book is published by Horizon Press, New York, and is copyright, 1962, by Herman Kahn.

By and large, most Americans and perhaps most other people find it hard to believe in the possibility of a controlled war.

It is difficult for many to believe that once a war starts either they or the enemy might be deterred from any action against each other by fear of reprisals.

Many have a feeling that thermonuclear war must be all-out and uncontrolled.

This is a naive point of view for two distinct reasons: first, it is not sensible, and second, it may not be true.

Even if one tries to be uncontrolled, he may find himself being threatened so persuasively by an enemy that he will control himself at the last moment.

One reason why we Americans and others of the West do not fully understand these possibilities is that we have been bemused by the examples of World War I and World War II

two of the most unlimited wars in history.

There was little attempt to negotiate during them. There was a widespread feeling that one did not negotiate during the course of a war unless one was either clearly victorious or clearly defeated.

The only moral or practical objective was to destroy the enemy's military power and then to dictate a peace.

Yet even in World War II it should be noted there were elements of control

★ ★ ★

**IF A MILITARY PLANNER JUST BEFORE** World War II had been asked to list the three most terrifying weapons of the coming war he would probably not have failed to include poison gas.

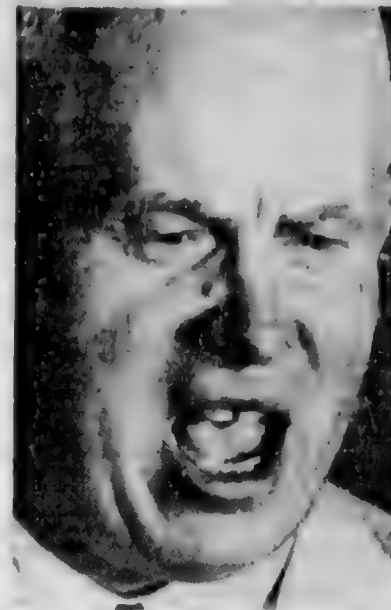
Indeed, by 1939 gasses had been made vastly more deadly than any used in World War I. In the all-out World War II, however, no gas was used by either side.

While to most people World War I and World War II are prototypes, actually they were most extraordinary wars. A study of the history of warfare between civilized nations reveals few periods in which the strategic doctrines of these wars held sway.

The more classical way has almost always been to fight for some definite, generally limited objective, or to prevent the enemy from attaining some such objective.

Accepting this view, countries have tended to make their actions, fighting, pressures, and reprisals consistent with their limited objective, in some sense.

Although modern technology has given



KHRUSHCHEV

... can war be limited?

nations the ability to fight uncontrolled wars greater than any in history, it has also made the sanctions against fighting such wars larger than ever before.

We found this out in Korea. Before Korea, few Americans would believe we could limit ourselves as we did there. In Korea we learned that just like anybody else we can be deterred, we can be cautious, we can be responsible.

Moreover, what is equally interesting and unknown to most Americans is that the Communists in the Korean conflict also behaved with caution.

While we did not attack supply bases and airfields in China, neither did the Communists interfere with our long, vulnerable supply lines by using submarines or mining. Had purely military considerations prevailed it is clear that "Chinese" and "North Korean" submarines might have had a field day in the seas surrounding Korea.

★ ★ ★

**AMERICANS ARE NO TOUGHER THAN,** say, the Japanese or the Germans, and these people surrendered rather than fight to the last man. Similarly, we may be restrained by sufficiently large threats—after an attack as well as before.

I suspect that the main reason why Americans find it difficult to believe a war can be fought rationally or reasonably is that in our country, for the most part, we do not give force any rational or reasonable role.

We feel that only a law violator, a criminal, a desperado, or a sick or insane person uses force.





B-1 The Virginian-Pilot and The Portsmouth Star, Norfolk-Portsmouth, Va., Sunday, Dec. 24, 1961

# Herman Kahn: 'Monster' in Pers

By Laurence Barrett

Herald Tribune News Service

Herman Kahn, the man who insists we can survive a nuclear war, comes across better in person than in print. He is a round, jovial scientist who could pass for the owner of a kosher delicatessen in his native land, the Bronx.

In his book, "On Thermo-nuclear War," and in other writings, Kahn discusses his subject with chilling empiricism.

"Despite a widespread belief to the contrary, objective studies indicate that even through the amount of human tragedy would be greatly increased in the postwar world, the increase would not preclude normal and happy lives for the majority of the survivors and their descendants," he wrote in the book.

He went on to estimate how many millions might die. Apparently he believes the number is smaller than most of us think, or at least that the toll can be reduced to manageable proportions if we are wise. Of one thing he is convinced: our civilization can survive a third world war.

The Kahn thesis has met

war and peace objectively. Let us equip ourselves to meet any circumstance. Let us come through alive if the worst occurs.

His business is inquiry. Last summer Kahn and a few associates created a new instrument for exploration, a nonprofit research organization in White Plains, N.Y., called the Hudson Institute.

The other members of the Hudson think factory's executive committee are David Truman, chairman of the public law and government department at Columbia University; Harvey Picker, president of Picker X-ray, and two lawyers, Oscar Ruebhausen and Max Singer.

Since 1947 Kahn had practiced physics and mathematics at the Rand Corporation of California, a research outfit that is largely dependent on Air Force contracts.

"Hudson will be a high-class Rand," Kahn said. "I left Rand because it was bound too closely by government work. It was difficult to do really broad work there. We will not depend on a single patron and much of our work will be made public. Our sphere will be national security and international order."

Hudson got its first four commissions from IBM's Federal

federal government—now negotiating with Hudson—need the circle of think organizations that have come into being since World War II?

"If the president of IBM needs a brain operation," explained Kahn, "he does not call in the plant doctor. He gets the best brain surgeon he can find."

"Experts in our field are as rare as good brain surgeons, and they don't work for IBM." As for Washington, "It simply hasn't the capacity to carry on sustained studies that may take three years. So they come to us."

In the midst of an interview in his rented house in Chapqua (the Kahns are having a new house built nearby with its own combination blast and fallout shelter), Kahn's petite wife is apt to bring out coffee and cake, while the two young children play in the next room.

But a conversation between Kahn and a visitor inevitably turns to war and peace.

Kahn insisted that he is not a ghoul. "If I say, for instance, that 10 million people will die under certain circumstances, rather than 20 million, some one always thinks I am saying 'ONLY 10 million.' It's like having a rich uncle and saving to

oretical wherewithal to bring about disarmament.

He likened the arms race to a game of chicken, the occasionally suicidal gamble indulged in by hot rodders. Two cars come at each other. The first driver to swerve aside is "chicken." "We have thrown away the steering wheel," Kahn believes. "We've erased the white line. We're not even sure what road we're on."

To hope for disarmament is one thing; to bank on it is another. He is inclined to think disarmament will come only after a very serious crisis—a state of affairs far more tense than today's—or an actual war.

There is always the chance of nuclear accident that sets off a duel of missiles or bombers or both.

This possibility, feared by most experts, might turn out to be a blessing, Kahn said. In a few sentences he set an imaginary situation in which the United States and the Soviet Union unwillingly begin tossing warheads at each other. Somehow both sides realize it is a mistake. They arrange a truce. The world wakes up the next morning, having lost a few cities, perhaps, and still teetering on the edge of total war.

"Do you think," Kahn asks,

government now I such far - fetch Kahn said.

Again, his ma must be prepar ly, for anything. anticipation of that he is propo war, or a contri he put in an claimer: "This i lem. It is just may be wrong. I go on like this I don't think it w way, though."

## Chris Jo

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with severe criticism — a moral tract on mass murder," one critic calls it.

It is charged that his work tends to discourage disarmament and to make the prospect of nuclear war seem less dreadful than it is. Kahn is unhappy about this opposition, not because of the personal accusation that his is an outsized blood lust, but because some of his opponents would stifle his line of inquiry.

Face to face, it is hard to quarrel with this man. A lively sort with a Kris Kringle shape, he peers calmly from behind thick glasses, and speaking rapidly, makes a case that can best be summarized: Let us explore all facets of our problems of

Systems Division, the Mitre Corporation, the Martin Company and Stanford Research Institute.

The subjects include "command control systems," "national interest in international order" and "civil defense as related to overall strategy." Initial financing for Hudson came from advance payments on these contracts and a donation from a benefactor who prefers anonymity. As Hudson's operating head, Kahn received \$26,000 a year, about the same salary he got from Rand.

What can a research group that now has just 15 staff members do for a giant like IBM that IBM cannot do for itself? For that matter, why does the

him, 'Uncle, when you die. . . ? Of course, he cuts you out of his will right away. You've got to say, 'Uncle, God forbid, if you die. . . ' I keep saying the equivalent of 'God forbid' and 'if' but some people ignore this."

He is frankly pessimistic about the prospect of negotiated disarmament because "there isn't enough good will around the conference table. Things aren't that simple."

Nevertheless, he thinks Washington must continue to seek an understanding with Moscow, and that organizations like Hudson should do what they can to provide the technological and the-

"that Kennedy and Khrushchev could go to their peoples the morning after and say, 'it was all a mistake. We'll go back to the way things were the day before yesterday?' Of course not. There would have to be a settlement. On that morning you could probably get signed any draft treaty that was ready."

Ugly as it is to contemplate, this sort of contingency thinking is being scouted and impressed on the White House and top American defense planners in Kahn's latest policy work for the government, the "diplomacy of the last stages of crisis."

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BUFFALO EVENING NEWS

Saturday, June 27, 1959 page A-2

# Nuclear War Hearings Show Public Needs to Face Facts

Survival Is Granted, but Rate of Recovery Hinges on Readiness to Learn Basic Rules

By NAT S. FINNEY

Buffalo Evening News Bureau

WASHINGTON, June 27—The United States could survive the kind of nuclear attack Russia is now capable of making, but it could survive in better shape for quicker recovery if it psychologically acknowledged the danger and learned simple, grass roots things about survival.

This conclusion sums up results of the first unblinking public look the Federal Government has ever taken at nuclear war. A subcommittee of the Joint Congressional Committee on Atomic Energy headed by Rep. Holifield (D., Calif.) took this look in a week of public hearings.

Rep. Holifield closed the hearings Friday with a declaration that "the facts of nuclear war won't fade away because they are unpleasant," and that "each of us must accept a personal responsibility because nuclear war is a personal threat to our survival."

Libby's "Swan Song"

Dr. Kahn held that, despite such a blow, the nation could recuperate, although readjustments would take a long time and the country would have to operate on standards it would consider "impermissible" before the attack occurred.

The Rand Corp. analyst held that estimates of the amount of land that would be unusable were far too high because the country would put up with degrees of fallout contamination it might consider unthinkable before an attack.

## Urges Wide Discussion

But Dr. Kahn warned that the country is psychologically unprepared to face a Russian threat of nuclear war. He praised the committee for its efforts to get the country to face up to the possibility it might have to take an enormous blow to preserve its independence.

"If you won't discuss it, you won't do it," is a safe rule of public psychology, Dr. Kahn maintained. He held that the possibility of nuclear war not

# Compromise Bill Defers Tax Cuts Until Next Year

By the Associated Press

WASHINGTON, June 27—A compromise tax bill holds off a cut next year in federal 10% tax on telephone charges and in rail, bus and plane ticket taxes.

Senate and House conferees Friday approved the compromise bill which continues Korean levels at midnight unless a new law is enacted.

The conferees sent back to Senate and House a bill which would, in its immediate effect, simply continue taxes without change until June 30, 1960. A decision on changing tax would again come before Congress.

## Fare-Tax Cut Proposed

Conferees abandoned Senate proposals which have: (1) repealed the 4% dividend income credit; (2) repealed the entire 10% communications and passenger transportation taxes; and (3) increased federal welfare assistance

"It may well be that the time has come in man's history when he must choose between the arms race and the human race," he declared.

Friday's hearings were, in a special way, the swan song of a member of the Atomic Energy Commission who came to the AEC when the thermonuclear bomb was born, and leaves it as new missile systems are changing the face of nuclear combat. He is Dr. Willard F. Libby.

Dr. Libby made his final session with the Joint Subcommittee the occasion for a last official effort to get the Government to give its full backing to a device he deeply believes could save the lives of millions if they had it in their homes.

only should be widely discussed, but that standards for what should be done after a nuclear attack should be discussed and established before any such attack can occur.

Dr. Kahn maintained, presumably on the basis of Rand Corp. studies, that the country has some time for frank discussion of nuclear war before Russia will be in a position to deliver such an attack as was assumed by the committee for its hearings.

## QUIET BIRTHDAY FOR MISS KELLER

EASTON, Conn., June 27 (AP)—Helen Keller, deaf and blind,

to the states by \$142,000, year.

The House bill was limit continuation of the 52% tax on corporation income and pi rates on automobiles, auto and accessories, cigarets, wine and beer.

The conferees proposed c in half the passenger trans tion tax effective June 30, provided Congress does no to continue the full rate then.

### No Gas Tax Boost

And they agreed to the of the 10% communication as it applies to local charges, also effective Ju 1960. The tax on long-di phone calls and other com



DAILY PRESS, Newport News, Va., Sun., July 1, 1962

3D

# Provocative Book About Nuclear

**THINKING ABOUT THE UNTHINKABLE**, by Herman Kahn. New York: Horizon Press. 254 pages, \$4.50.

Reviewed by Bill Amanna

x x x

Herman Kahn is a physicist who gained national prominence through his book "On Thermo-nuclear War," in which he described with dispassionate thoroughness what the U. S. could expect in the event of nuclear war. The book unleashed a heated debate over civil defense which is continued in Mr. Kahn's present volume.

The author's chief premise is that although "thermonuclear war may seem unthinkable, immoral, hideous or highly unlikely, it is not impossible. To act intelligently we must learn as much as we can about the risks."

How likely is accidental war? How can it be made less likely? What would conditions be if a nuclear attack leveled 50 American cities? How many American lives and European and Russian lives, would an American President risk by standing firm in differing types of crises? By starting a nuclear war?

Mr. Kahn doesn't stop there. He goes on to put his questions in even more concrete and hence more upsetting terms. He considers, for example, the defense of Europe. We have increased our non-nuclear forces to meet a possible Soviet conventional attack in Europe. The author notes our policy would be to initiate the use of nuclear weapons should conventional forces prove inadequate. So, whether we intend it or not, we may have obligated ourselves to

Some of Mr. Kahn's interesting chapters so-called "war games. By this hypothetical situation suggested. All steps on a position ladder" are proposed, for example, so many missiles has so many possible 'A' attacks. attacks. With so much accuracy. So many So many persons a complex of situations are the alternative

The author's point should think of it many individual within the context of national strategy. is with getting it discussed in the open

Mr. Kahn's contribution to the debate seems

There are questions to be answered, Mr. Kahn insists, and he lists a few:

## ***The Nation's Best Sellers***

Best sellers of the week as  
compiled by Publishers' Weekly:  
The Book Industry Journal.

### **FICTION**

#### **1. SHIP OF FOOLS**

By Katherine Anne Porter

go to all-out war.

### **MUST MAINTAIN PRETENSE**

The President, Mr. Kahn holds, may conclude that even if he is not willing to initiate a war or limited reprisal that could easily develop into war, he must maintain a pretense of being willing. Perhaps the facade will work. After all, even if he is not willing, the Soviets cannot rely on this. And, withal, we may in fact do nothing ourselves; it may be forced on us or occur inadvertently.

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THE SUNDAY STAR  
Washington, D. C.  
June 24, 1962

Books

C-5

## Prophet of Changing Nuclear-War Policies

**THINKING ABOUT THE UNTHINKABLE.** By Herman Kahn. (Horizon Press; \$3.50.)

America's nuclear-war policies have changed radically during the past year, and Herman Kahn has been the prophet of that change. The bible of the new and dominant nuclear school is his book, "On Thermonuclear War," which has sold an astonishing 30,000 copies since publication in 1960. That bible was written for the priesthood, however, and its great length and difficult new language has kept the broad public from understanding just what Mr. Kahn and his fellow thinkers about war are driving at.

This new and most welcome book, "Thinking About the Unthinkable," is designed by Mr. Kahn to do three things:

- First describe his basic ideas in more simple language.
- Second, tell about the strange techniques used by professional military analysts.
- And, third, stimulate more thinking about "unthinkable" modern war.

### Someone Must Do It

Mr. Kahn, director of the Hudson Institute, is a happy extrovert who likes his work. This seems to infuriate a number of persons who attacked him personally after his first book for his failure to affect the long face of an undertaker. But Mr. Kahn points out that someone has to think about nuclear war just as someone has to think about cancer and polio. No rational person can fault him on his logic, though his ideas might sell better if he started each chapter with, "Heaven forbid it should happen,

Western powers make sweeping concessions there and points out, truthfully, that there is no way NATO forces can save the city without starting a nuclear war that could well ruin the United States. Mr. Kennedy replies with the threat of a doubled or quadrupled defense budget. "Such an acceleration of the arms race, dangerous as it is, could still be less dangerous (for America) than either an attack or an accommodation," the President says. Mr. Khrushchev will either have to fall behind in the race or damage his tight economy. The threat makes him back down.

In a small way this was done last year, but Mr. Kahn's scenario is, in effect, an outline of a bolder plan for handling a future life-or-death crisis without the war Mr. Kahn—and the rest of us—hopes to avoid.

This is an important book and an excellent opportunity to see one of the nuclear age's most influential minds in action.

—RICHARD FRYKLUND.

## Other Books

### GENERAL

**A CRUISING GUIDE TO THE CHESAPEAKE.** (Including the Passages from Long Island Sound along the New Jersey Coast and Inland Waterway.) By Fessenden S. Blanchard. (Dodd, Mead; \$6.50.) (Revised Edition.)

**THE THOMAS WOLFE READER.** Selected with an introduction by C. Hugh Holman. (Scribners; \$7.50.)

but. . ."

The techniques of strategic analysis are the most fascinating part of the book. He gives many examples of mental gymnastics such as "war and peace games," "scenarios" and "abstract models" which simply serve to force analysts to think of all possible dangers and opportunities in various strategies and methods of crisis management. These "sophistications," which could be overlooked in the old days without fear of losing a civilization, are regarded by the administration as necessities in the nuclear age.

**Future Ultimatum**

One rather casually presented "scenario" is alone worth the price of the book. This is a brief story about one way in which some future ultimatum over Berlin might be handled. In Mr. Kahn's little drama, Chairman Khrushchev tells President Kennedy that he will seize West Berlin unless the

All four of Wolfe's novels are represented in order of publication with several fully self-contained passages from each and included also are eight short stories and in its entirety "The Story of a Novel."

**DIARY OF THE CIVIL WAR, 1860-1865.** By George Tem-

**The Sunday Star**  
**WEEKLY BOOK SURVEY**

*The Sunday Star has arranged with the leading book sellers of Washington and suburban areas to report each the books which sell best as a guide what Washington is reading. The numbers represent the rank of each among best sellers at the store named.*

**For Week Ending June 22**

**FICTION**

- |                                 |
|---------------------------------|
| 1. "Ship of Fools," Porter      |
| 2. "Youngblood Hawke," Wouk     |
| 3. "Dearly Beloved," Lindbergh  |
| 4. "Bull From the Sea," Renault |
| 5. "The Reivers," Faulkner      |
| 6. "Agony and Ecstasy," Stone   |

**NONFICTION**



2 The Daily Telegraph, Monday, May 3, 1953

# PASSIVE CHURCH NOT FOR ME, SAYS Mgr KENT

By GUY RAIS

**MONSIGNOR BRUCE KENT** general secretary of the Campaign for Nuclear Disarmament, promised yesterday to strive for peace for the rest of his life.

But he side-stepped the issue of whether he would defy the Roman Catholic Church.

## RUSSIANS REJECT PETITION

**ORGANISERS** of the Women of Families for Defence, a new group which supports a strong defence for Britain and multilateral disarmament, protested yesterday at the refusal of the Soviet Embassy in London to accept a petition signed by 13,000 supporters.

The petition urging the Russians to response to the West's proposals for "balanced and verifiable disarmament," was taken by the group's leader, Lady Olga Maitland, to the embassy before a rally in Trafalgar Square.

But she told a gathering of about 200 supporters in the rain-soaked square: "We took our petition in a box to the embassy and explained who we were and what it contained. We were told by voice on the inter-com that the embassy did not accept petitions, but we could come back and talk to them."

"I put the box at the entrance at the gate together with symbolic red tulips in memory of those who died in the last war, and a reminder to the Soviets that we are determined to maintain freedom in a sensible and responsible manner as we have done for the past 38 years."

"When we reached the road outside, we were told by police that they had received a complaint about litter at the Embassy gate."

Lady Olga added indignantly:

"I am not going to speculate on impossibilities that have not appeared," he told a radio interviewer in London.

In an interview on the London Broadcasting Company, Mgr Kent denied that the CND movement was Communist-infiltrated.

"There are some 250,000 members of CND and only 19,000 Communists in the country, so their numbers are insignificant. It is the policies that count," he said.

Questioned about the role of the Church and CND, he said: "If the Church is busy sitting in its sacristies counting its rosary beads and ignoring the great problems of the world, then I don't think it is the right church for me."

Asked if there was any chance of him giving up CND, he said: "I am very committed to peace work and I am going to stay with peace work for the rest of my life."

Pressed to explain whether this would mean he would remain with CND if his church superiors told him to give it up, Mgr Kent said: "I did not say that."

"I said the issue of working for peace is going to be with me all my working life. The other issue has not arisen, and I don't think it will."

### Too political

But Mgr George Leonard, personal assistant to Cardinal Hume, Roman Catholic Archbishop of Westminster, hinted that the cardinal might consider CND too political for Mgr Kent to lead.

Asked during an interview on London Weekend television if the cardinal would be pre-

## CND to visit Soviet-backed peace meeting

By CHARLES LAURENCE

**THE** Campaign for Nuclear Disarmament is to send two members to the Soviet-sponsored World Peace Council in Prague next month, it has been revealed after a week of controversy.

The pair have not yet been named and CND spokesmen have denied that they have been duped by the Russian propaganda machine. The CND members will be going as "observers" rather than delegates.

Two officials of the Quakers, who are closely involved with CND, will also be attending the meeting.

The officials, from the Quaker Peace and Service department at Friends House headquarters in London, will also be travelling as observers.

A total of 61 British delegates will be going to the meeting, which the organisers are calling the Council for Peace and Life. They are being selected by the British Peace Assembly, the London arm of the World Peace Council. Mr Arthur Scargill, the miners' leader, is sponsoring the organising committee.

### Front organisation

The Quakers, the Religious Society of Friends, were caught up in controversy when it was disclosed that last year they were involved with a "red carpet" trip to Moscow during which they had been impressed with the "depth and sincerity" of the Russians' desire for peace.

The World Peace Council is generally considered a front organisation, funded from Moscow, which attempts to influence Western peace movements through conferences and propaganda.

A Friends House spokesman said: "I think we would be keen to keep our distance. We would not send delegates to anything to do with the World Peace Council."

The Quakers have pursued peace policies since their foundation in 1660. Most of the 20,000 British Quakers are affiliated or individual members of CND as well as running their own peace groups.



Yorkshire ex-Servicemen goose-stepping in theatrical Soviet uniforms outside Sheffield Town Hall yesterday as a protest against the flying of the Red Flag by the Left-wing city council to mark May Day.

## May Day protest at 'looney' Left's Red flag

By JOHN WILLIAMS

**TWO** former naval men protested yesterday at the raising of the Red Flag to mark May Day

nantly: "They called out petition 'litter' and we were told we must remove it. I went back and collected the petition. It shows the Russian intransigence, but they won't get away with it. I promise that Andropov will receive the petition in the Kremlin by post."

### MAKING THEIR PEACE

Peace campers outside the American radio relay station at Menwith Hill, near Harrogate, Yorks, at the weekend, received a surprise invitation to escape from torrential rain and be guests of the base. They spent an hour drinking coffee and talking to American staff.

pared to ask Mgr Kent to resign as general secretary if CND became too political. Mgr Leonard said: "Of course, that's the whole point of the cardinal expressing his reservation at this point."

"I think you could take it that he would follow his conscience and not be deterred by any sort of adverse reaction."

Mgr Leonard made it clear that in the cardinal's view, CND was very close to becoming too political for Mgr Kent to lead.

The battle over control of CND began four days ago, when Cardinal Hume warned Mgr Kent there might be a conflict with his role as a priest if CND became too political.

### GREENHAM ROW OVER BABIES

Women peace protesters were criticised last night after they carried babies and toddlers over rolls of barbed wire into the Greenham Common base during a May Day invasion. There were angry scenes as two Ministry of Defence police struggled to stop them swarming through a tiny gap they had made in the perimeter fence.

The local MP, Mr Michael McNair-Wilson, Conservative member for Newbury, said: "How appallingly irresponsible for a mother to use her child in a protest where somebody could get hurt."

in Sheffield by goose-stepping outside the town hall wearing hired Russian uniforms.

The tradition of raising the Red Flag was begun two years ago by the ultra Left-wing council.

But last year the city's Socialists abandoned the ceremony because of the Falklands crisis.

Yesterday, the flag was unfurled in what Councillor Irvine Patnick, leader of the Conservatives on South Yorkshire's County Council, described as another "looney scheme."

The two men in uniform, who would not identify themselves,

marched down the town hall steps as Mr Patnick received a mock certificate from Major John Tavior, chairman of the local Ex-Servicemen's organisations.

The certificate declared that Sheffield was accepted into the Soviet Socialist Republic "for driving business out of the city, brainwashing the young, giving Mr Arthur Scargill 'political asylum,' assisting the Marxist creed and being without defence."

Other "looney" schemes include:

Banning Kit Kat biscuits from the City hall canteen, because the makers have links with South Africa.

On-the-spot MOT testing for children's push chairs and re-naming streets after Socialist leaders.

### 'Sick of it all'

As demonstrators unfurled the Union flag Mr Patnick said: "We do not want the Red Flag and people are pig-sick of it all and we felt some protest was necessary."

"I was asked to come here by people who organised this spontaneously. In Sheffield, we have a Communist peace officer, a treaty with Donetsk, and Marxist street names."

From June 1st  
21 Golden Falcon flights  
a week to the Gulf



4—Hawaii Tribune-Herald, Friday, November 6, 1964

# Hawaii's TRIBUNE-HERALD

MEMBER DONREY  MEDIA GROUP

MONTE MORROW

General Manager

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Editor

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## U. S. COULD LOSE EDGE IN NUCLEAR POWER BALANCE

With the election over, the President and his defense secretary must now make some hard military research-spending decisions.

The nuclear balance of power between the United States and the Soviet Union is so unstable, some key Pentagon scientists say privately, that it could be upset quickly by three Soviet research breakthroughs:

—Development of an effective antimissile-missile network capable of handling massive attacks of extremely sophisticated ICBMs with a high rate of kill.

The concept these men have in mind would be long jumps beyond Nike-X. The antimissile-missile system they envisage might in fact clobber ICBMs a thousand or more miles from target or even before they were airborne.

The Russians are experimenting heavily with electromagnetic pulse and radiation from strong nuclear explosions for killing missiles in

The Russians have been putting large sums into jamming and other electronic countermeasures. They have assigned large numbers of scientists to research on a series of wayout blue sky communications methods not susceptible to any known interference.

The worried U. S. scientists are not comforted by the thought that the United States now heavily outweighs the Soviet Union in nuclear weapons.

Unclassified studies include estimates that the United States now has more than 50,000 nuclear weapons, compared with 5,000 to 8,000 in Soviet hands.

But these U. S. research men point out that regardless of this 1964 U. S. supremacy, and sizable American research and development expenditures, U. S. miscalculation on what research leads to push heavily, or better Russian guesses, or Russian



explosions for killing missiles in their silos before they are fired.

—Development of a family of ICBMs so accurate that more than half of those fired would hit within 500 yards of target.

The extremely large boosters available to the Russians make possible their use of larger, more reliable guidance systems. Russian technical literature indicates the Reds are putting a sizable chunk of top caliber manpower into improving their electronics and guidance.

Some scientists here predict this super accuracy guidance before 1972.

—Development of a military world-wide communications system invulnerable to electronic interference (electronic warfare countermeasures) or to radiation from nuclear blasts.

luck, or more Russian funds could put the Reds ahead in one or all of these three key research fields.

There is deep concern here that the Russians are putting more money and effort in these key areas than is the United States.

U. S. research has gone all-out on "penetration aids" for ICBMs. Top Defense Department men are convinced the United States can devise ways to get missiles through, regardless of Russian improvements in antimissile defense.

But despite this confidence, the Russians, if their research goes well, might be able to knock out U. S. missiles before they even got out of their silos. Then penetration aids would be of no value.

Or the Reds could knock out U. S. communications.



# Critics say U.S. has plans to win a nucle

By Tim Ahern

Associated Press writer

**W**ashington—Ever since President Reagan took office, his administration has been pestered by the question of whether it is more willing than past administrations to fight a nuclear war.

Critics contend that his ad-

## Analysis

visers have drafted a plan to win a nuclear war with the Soviet Union. Public opinion polls have repeatedly said that many Americans are concerned about his willingness to use nuclear weapons.

Administration officials deny that premise.

"There is nothing new about our policy," Defense Secretary Caspar Weinberger wrote last year in a letter to dozens of newspapers.

U.S. policy on use of atomic weapons is spelled out in several highly classified documents. None has been released publicly and administration officials refuse to even acknowledge the existence of one.

But a year-old document drafted to provide background on military spending requests has been

**"Everybody's going to make it if there are enough shovels to go around."**

—T.K. Jones, deputy undersecretary of Defense

tration as planning to win a "protracted nuclear war."

Several officials familiar with U.S. policy—each of whom talked on the condition that he not be identified—agreed that one problem is a public perception that the administration is more ready than past administrations to use the weapons. The officials said the belief arose largely from injudicious public statements by officials.

T.K. Jones, deputy undersecretary of Defense, told the *Los Angeles Times* last year that the United States could recover from an atomic war in two to four years. "Everybody's going to make it if there are enough shovels to go around," he said, explaining the shovels were needed to dig primitive civil defense shel-

the Soviet Union to seek earliest termination of hostilities on terms favorable to the United States," according to published reports.

That philosophy was attacked by those in the nuclear freeze movement as meaning the Reagan administration thought a nuclear war was "winnable." Such a view, according to critics, makes atomic war more likely.

The *Los Angeles Times* reported in August that Mr. Reagan had approved National Security Decision Direction 13, which directed the Pentagon to create a "master acquisition plan" to develop nuclear weapons to carry out the U.S. policy. The story said the document contemplates the possibility that a nuclear war could last up to six months.

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reported on several occasions. The first report cropped up in May when newspapers printed excerpts and it appeared again as recently as last weekend when a wire service carried stories saying it had seen the whole text.

On Monday a Pentagon spokesman, Benjamin Welles, asserted again that it is "completely inaccurate" to portray the adminis-

ters.

The debate began in May when *The New York Times* printed excerpts of the document entitled "Fiscal 1984-1988 Defense Guidance."

The document says that "should deterrence fail and strategic nuclear war with the U.S.S.R. occur, the United States must prevail and be able to force

never publicly confirmed the existence of the directive.

In his August letter to more than 75 newspapers, Mr. Weinberger complained about "completely inaccurate" reports "that portray this administration as planning to wage protracted nuclear war or seeking to acquire a nuclear war-fighting capability."

He added: "There is nothing

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ABOVE: originally SECRET diagrams showing the immense casualty reductions for simple shelters and local (not long distance as in 1939) evacuation, from a UK Home Office Scientific Advisers' Branch report CD/SA 72 (UK National Archives document reference HO 225/72), "Casualty estimates for ground burst 10 megaton bombs", which exposed the truth behind UK Cold War civil defence (contrary to Russian propaganda against UK defence, which still falsely claims there was no scientific basis for anything, playing on the fact the data was classified SECRET). Evacuation plus shelter eliminates huge casualties for limited attacks; notice that for the 10 megaton bombs (more than 20 times the typical yield of today's MIRV compact warheads!), you need 20 weapons, i.e. a total of  $10 \times 20 = 200$  megatons, for 1 million killed, if civil defence is in place for 45% of people to evacuate a city and the rest to take shelter. Under civil defence, therefore, you get 1 million killed per 200 megatons. This proves that civil defence work to make deterrence more credible in Russian eyes. For a discussion of the anti-civil defence propaganda scam in the West led by Russian agents for Russian advantage in the new cold war, just read posts on this blog started in 2006 when Putin's influence became clear. You can read the full PDF by clicking the link [here](#). Or see the files [here](#).



~~SECRET~~*Declassified Dec 1988 J. C. Cottrell*~~SECRET~~

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Casualty Estimates for ground burst  
in Major citiesSummary

m56

Tentative estimates of casualties from up to 45 ground burst 10 megaton bombs on British cities are estimated for various conditions of shelter and evacuation.

Casualties from an attack from up to 45 bombs (to cause casualties) when there is no shelter or evacuation are found to range from over 2½ million killed by a single bomb to just over half a million per bomb by 45 bombs. The total evacuation of the evacuation area shown in Fig. 2 is found to reduce fatal casualties from this attack by from 66 to 99% depending on the number of bombs. Evacuation of the priority classes (45%) combined with the provision of a high standard of shelter for the remaining inhabitants of the evacuation area would reduce fatal casualties from this attack by from 66 to 99% depending on the number of bombs. These are the maximum savings that could result from these policies. If the enemy adjusts his attack so that all his bombs were aimed at reception areas, this would result in maximum casualties even the evacuated and/or sheltered population, the reduction in fatal casualties would range from 62 to 44% for the policy of 100% evacuation, and from 79 to 65% for the policy of 45% evacuation combined with shelter. In the event of either of these policies being adopted the enemy would probably make some adjustments in his attack without reducing the loss to the limiting case above of aiming all his bombs at reception areas. The saving in casualties would then be intermediate between the two sets of figures given above.

Introduction

1. The object of the present paper is to arrive at the best possible estimate of the casualties from up to 45 ground burst 10 megaton bombs distributed in various ways over British cities in order to compare the effects of a number of possible shelter and evacuation policies. The extremely large scale of many of the casualties involved in this assessment is based on the fact, however, that the direct observational or experi-

mental data are not available in many cases which means that the resulting estimates of casualties are likely to contain considerable errors. It might, in fact, be argued that the poor quality of the basic data does not justify the detailed methods adopted in this note. The advantages of the method are, however, that they enable the effect on the total casualties of each of the assumptions to be calculated, and the estimates to be refined from time to time as fresh data become available. Moreover by setting out the assumptions in this way attention tends to be focused on them, thus provoking criticism and discussion.

2. For a population under some sort of cover (i.e. not in the open) two of the four main effects of the explosion of nuclear weapons dominate in producing casualties. These two effects are blast and radioactive fallout. Of the other two effects, heat flash, though a serious casualty producer among people in the open, will cause a direct casualties among a population under cover though it will produce a number of indirect casualties as people being trapped in fires. Initial gamma radiation (and neutrons) will only cause casualties outside the radius of blast

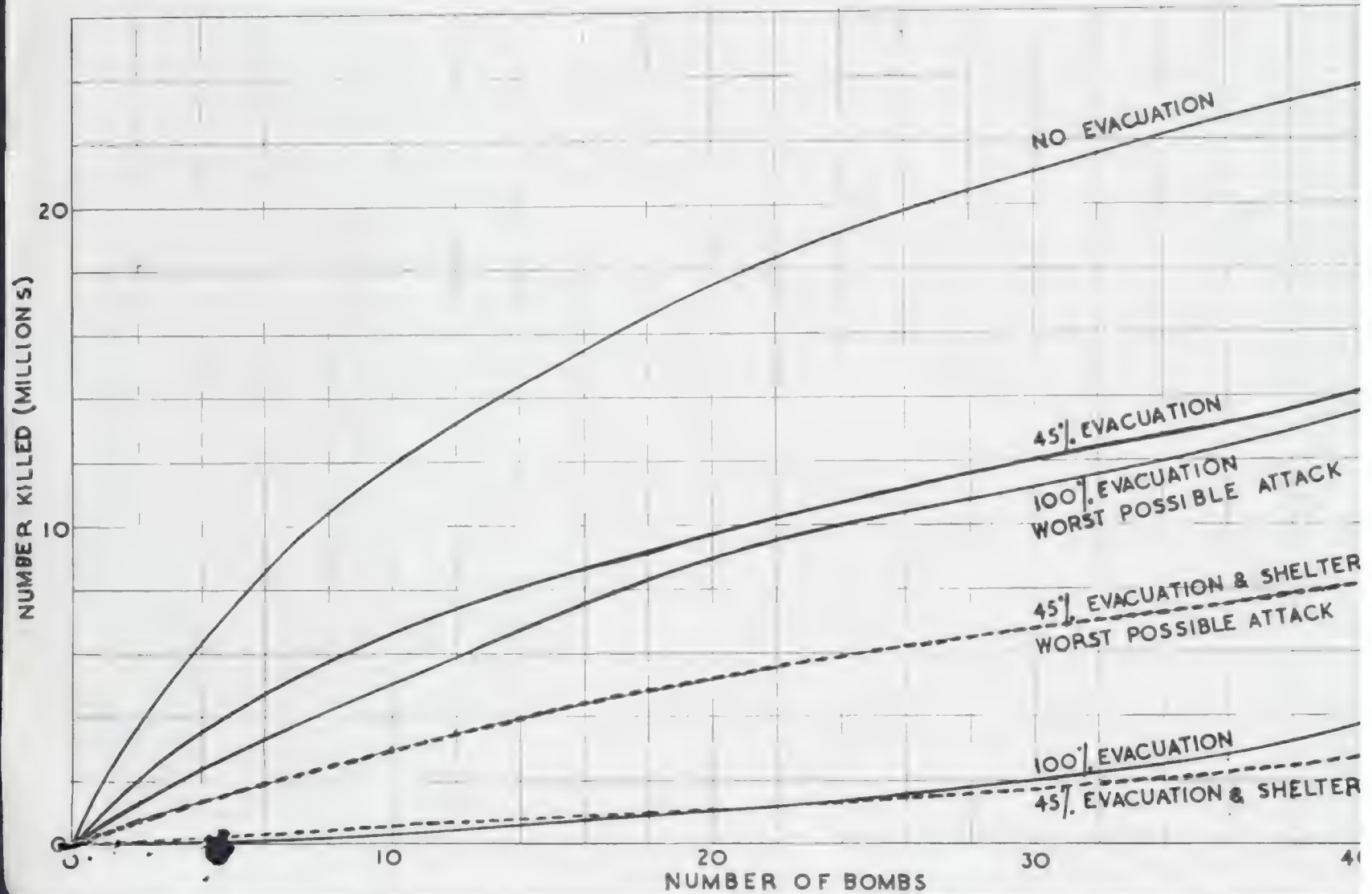
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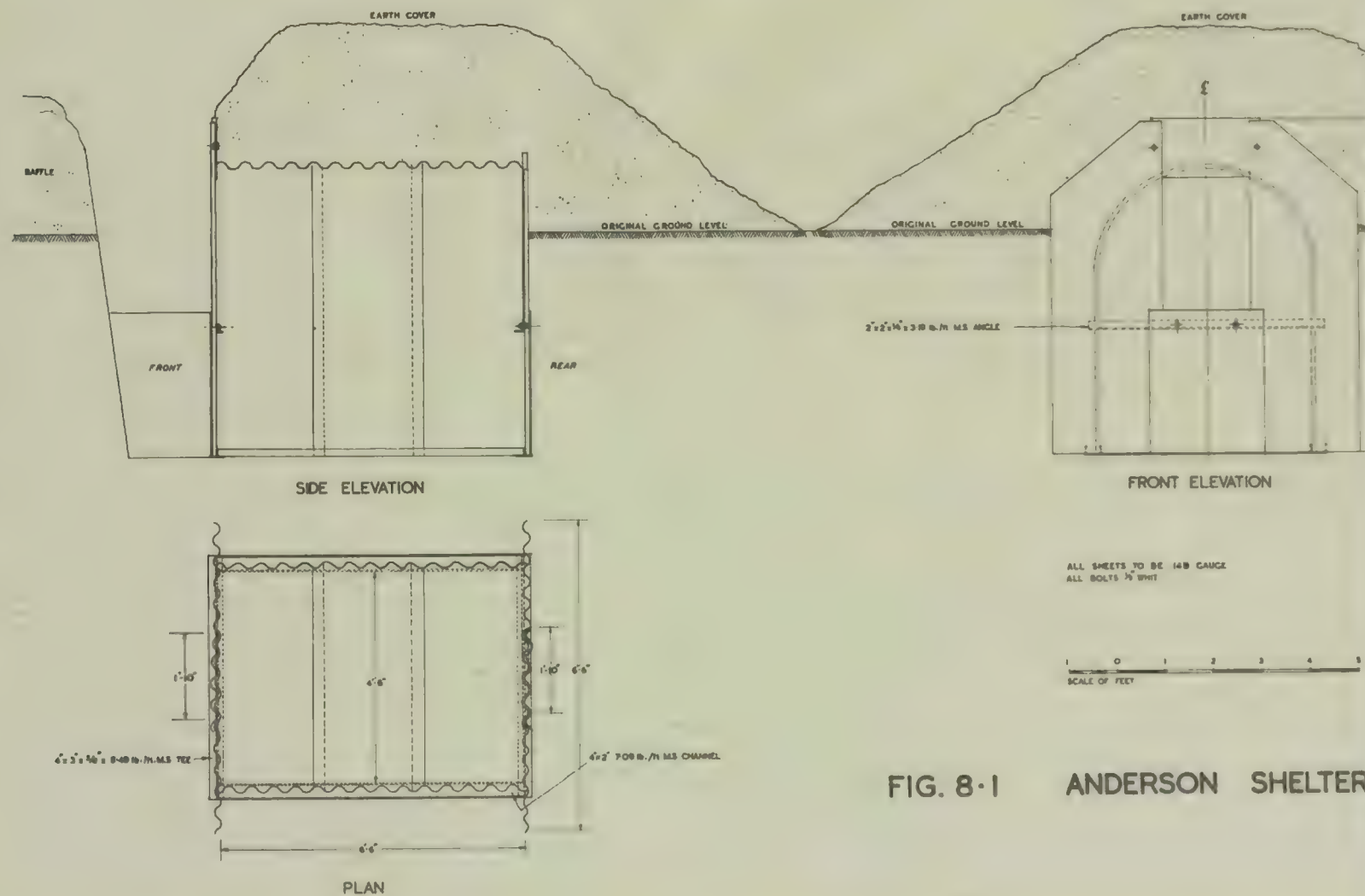
**SECRET**



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TOTAL CASUALTIES FOR DIFFERENT EVACUATION POLICIES









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Declassified 22.3.71  
 See note on fly-leaf  
 at front of this volume.

AB George  
 Home Office Archives  
 28.5.75.

STRUCTURAL DEFENCE, 1945

by

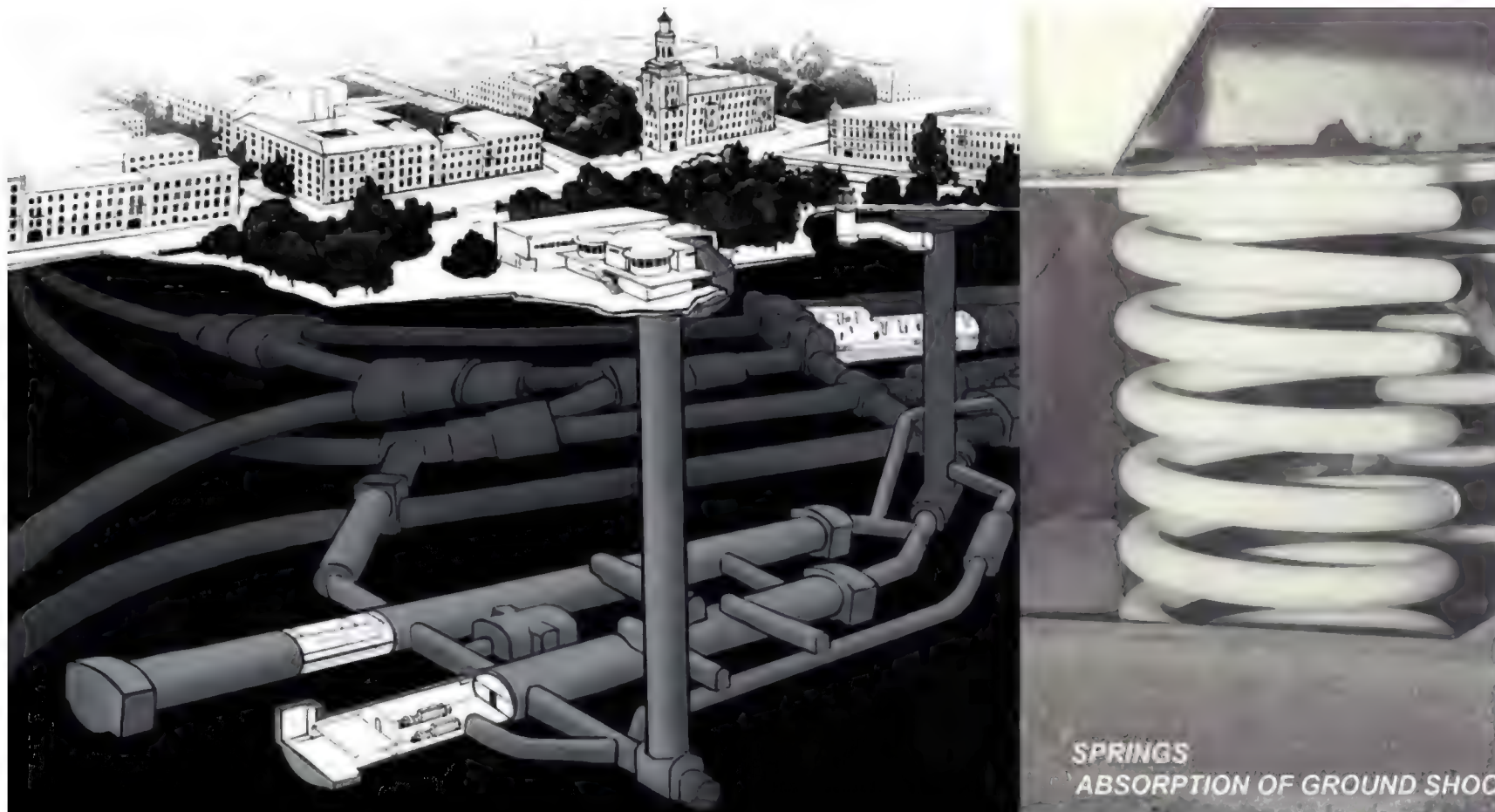
D.G. CHRISTOPHERSON, D.Phil.

Fellow of Magdalene College, Cambridge.

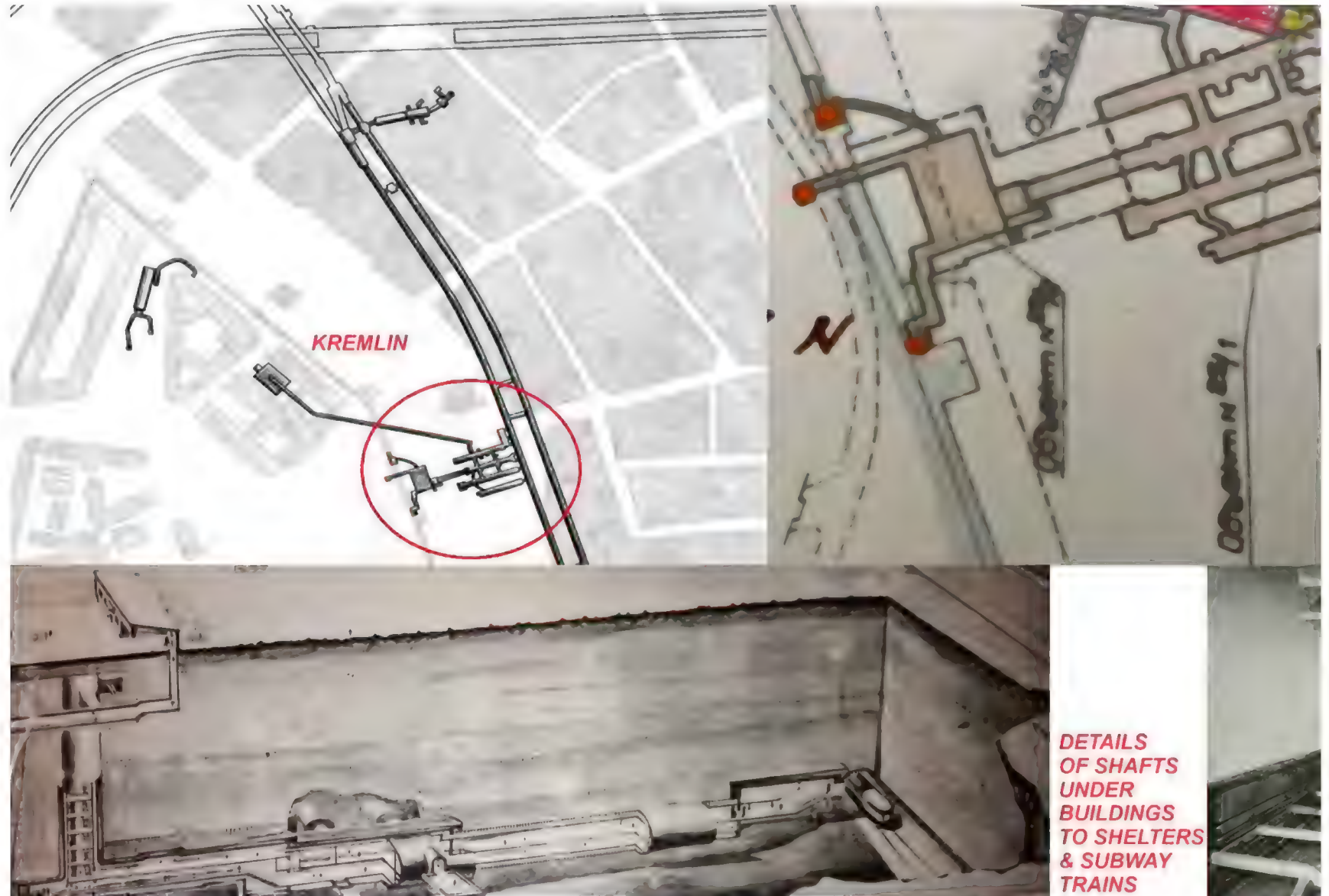
Formerly of the Research and Experiments Department, Ministry of Home Security

ABOVE: the originally CONFIDENTIAL classified document chapters of Dr D.G. Christopherson's "Structural Defence 1945, HC 450", giving low cost UK WWII shelter effectiveness data, which should also have been published to prove the validity of civil defence countermeasures in making deterrence of future war more credible by allowing survival of "demonstration" strikes and "nuclear accidents / limited wars" (it's no use having weapons and no civil defence, so you can't deter aggressors, the disaster of Munich appeasement giving Hitler a green light on 30 September 1938, when Anderson shelters were only issued the next year, 1939!). For the original WWII UK Government low cost sheltering instruction books issued to the public (for a small charge!) please [click here](#) (we have uploaded them to internet archive), and please click [here](#) for further evidence for the effectiveness of indoor shelters during WWII from Morrison shelter inventor Baker's analysis, please click [here](#) (he titled his book about WWII shelters "Enterprise versus Bureaucracy" which tells you all you need to know about the problems his successful innovations in shelter design experienced; his revolutionary concept was that the shelter should be damaged to protect the people inside because of the vast energy absorption soaked up in the plastic deformation of steel - something which naive fools can never appreciate - by analogy, if your car bumper is perfectly intact after impact you're unlikely to be because it has not absorbed the impact energy which has been passed on to you!). We have also placed useful declassified UK government nuclear war survival information on internet archive [here](#) and [here](#). There is also a demonstration of how proof-tested WWII shelters were tested in 1950s nuclear weapon trials and adapted for use in Cold War nuclear civil defence, [here](#), thus permanently debunking the somewhat pro-dictatorship/anti-deterrence Jeremy Corbyn/Matthew Grant/Duncan Campbell anti-civil defence propaganda rants which pretend to be based on reality, but obviously just ignore the hard, yet secret, nuclear testing facts upon which UK government civil defence was based as my father (a Civil Defence Corps instructor) explained [here](#) back in 2006.

doesn't lead it. This is why it backed Nazi appeasement (cheering Chamberlain's 1938 handshakes with Hitler for instance) and only switched tune when it was too late to deter Nazi aggression in 1939; it made the most money that way. We have to face the facts!





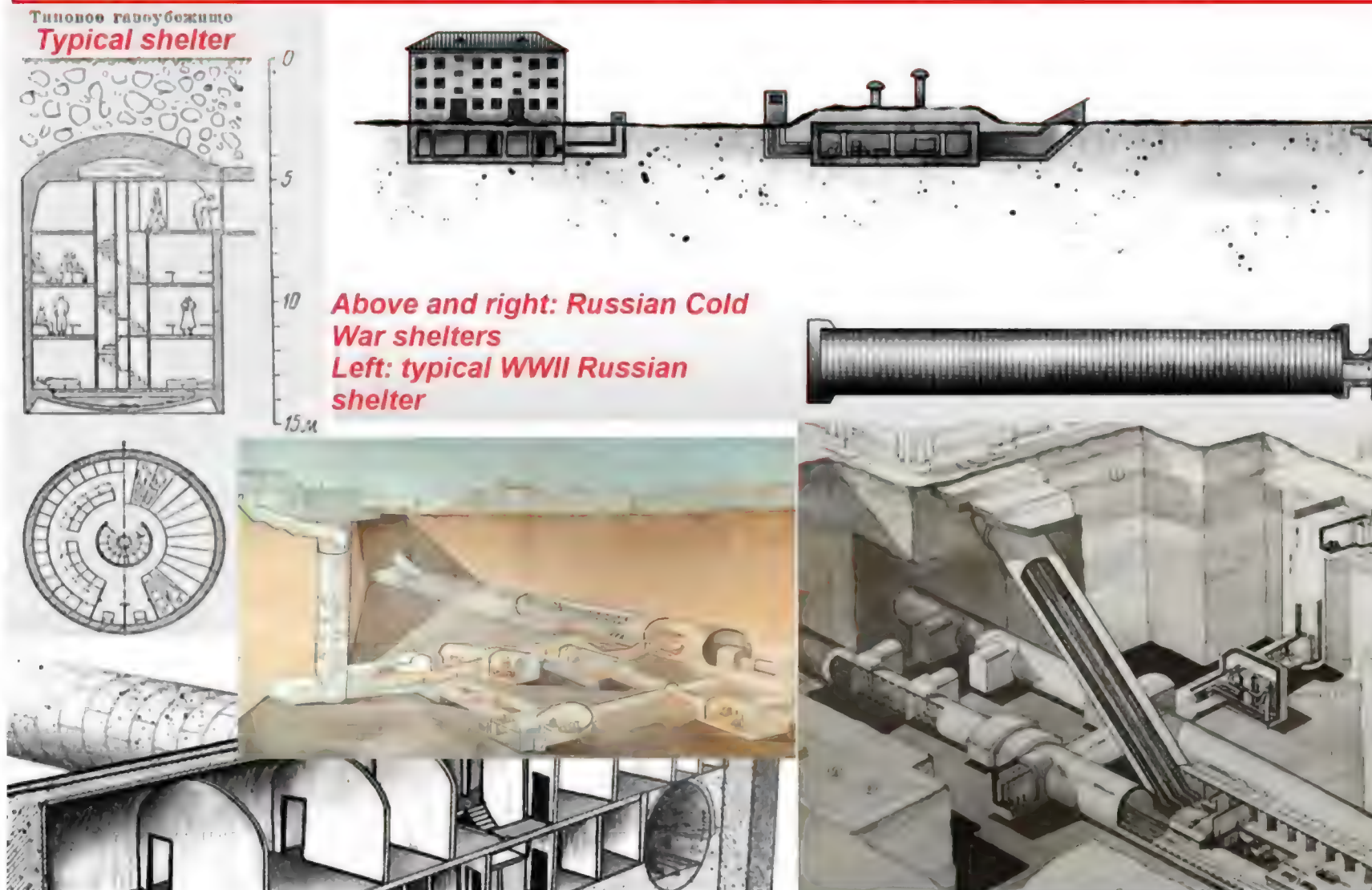




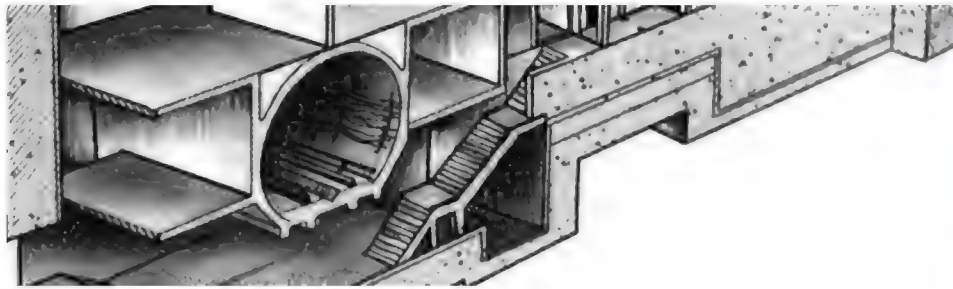
233,067 views Streamed live on 18 Apr 2021 - <https://www.youtube.com/watch?v=Vpz0TOA1cLM>

## BUNKER 703 - SPECIAL STORAGE OF THE USSR MFA - MUSEUM OF MODERN FORTIFICATION

Lecture by historian Dmitry Yurkov dedicated to the declassified “bunkers” of Moscow. Based on a history of Soviet special fortification. For the first time - about “metro 2” and “Stalin’s bunkers” with myths, based on archival materials.

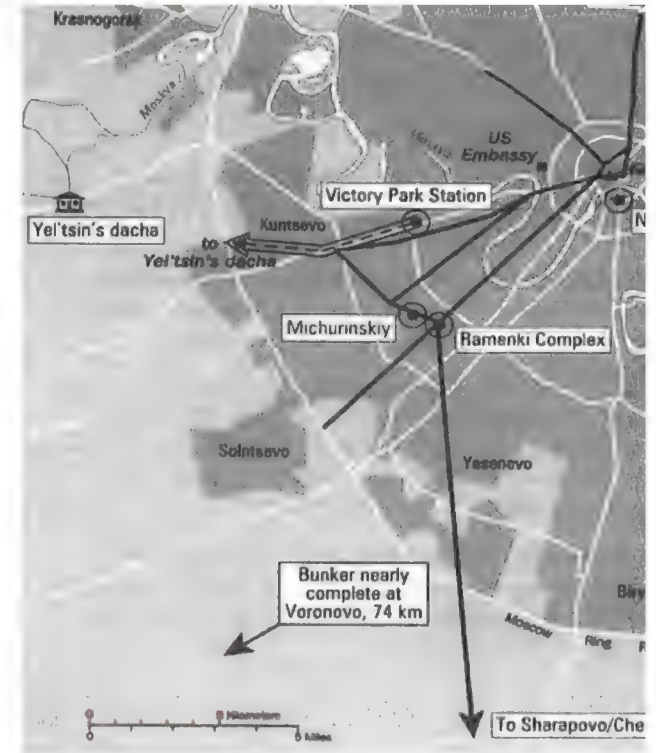
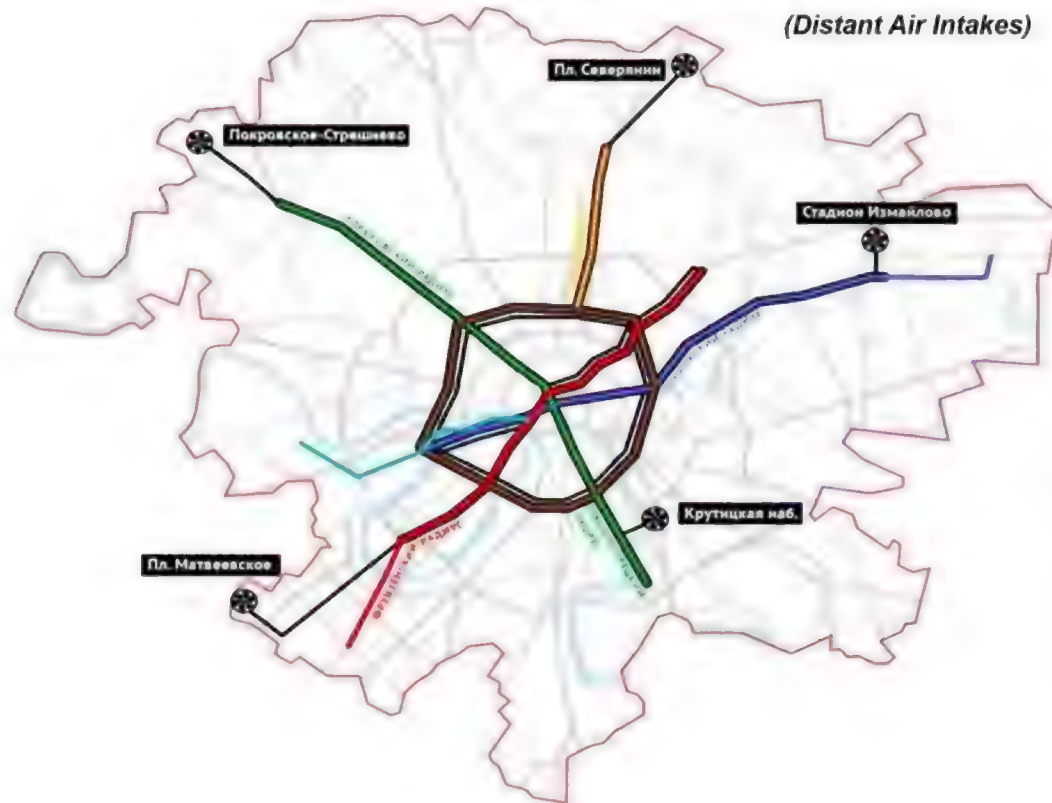






## ДАЛЬНИЕ ВОЗДУХОЗАБОРЫ

(Distant Air Intakes)



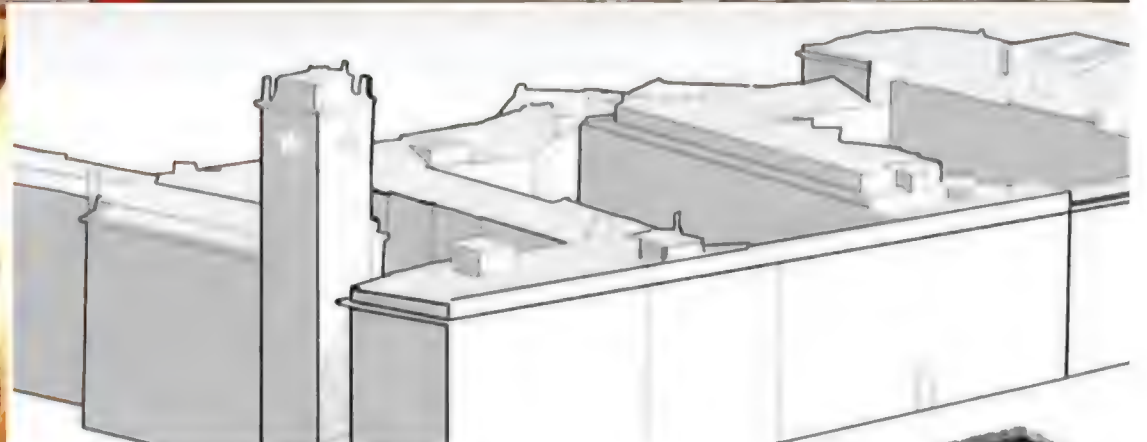
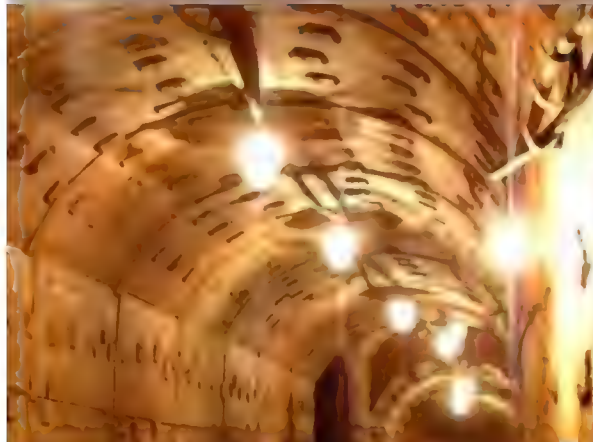
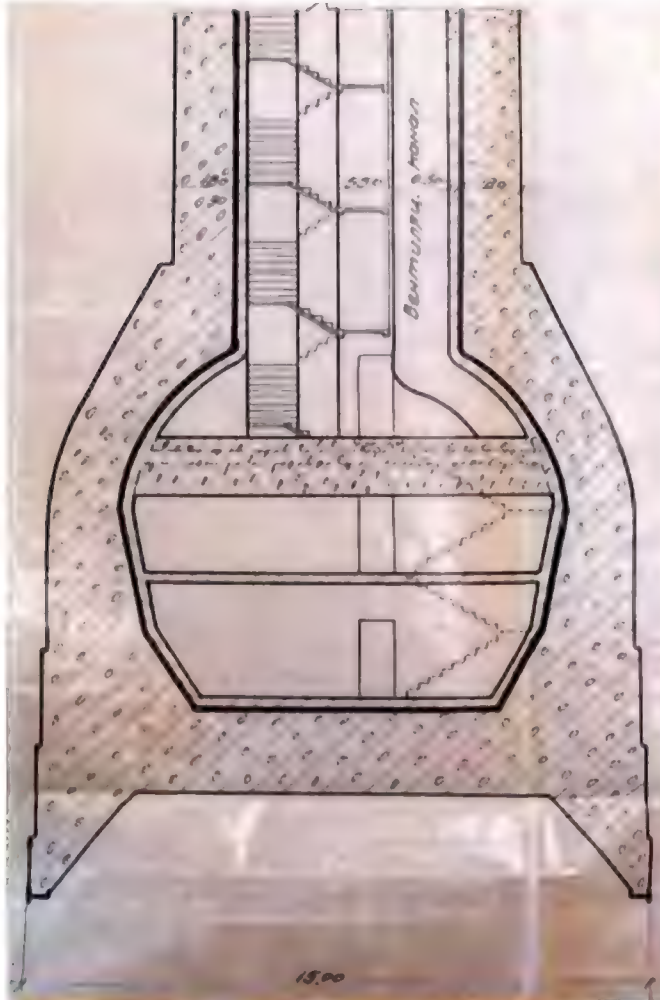


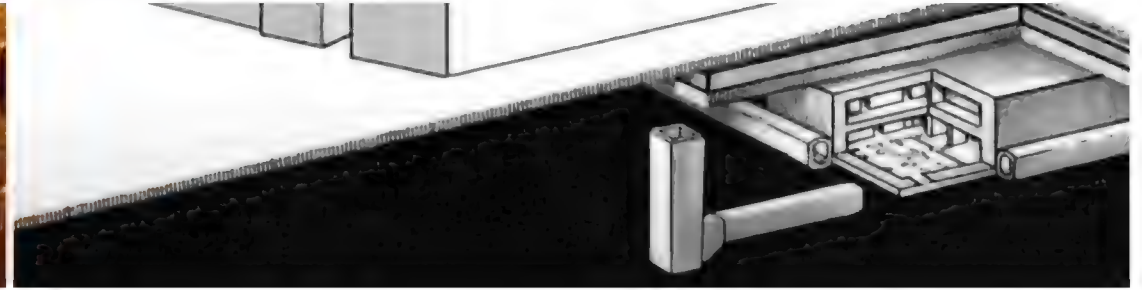
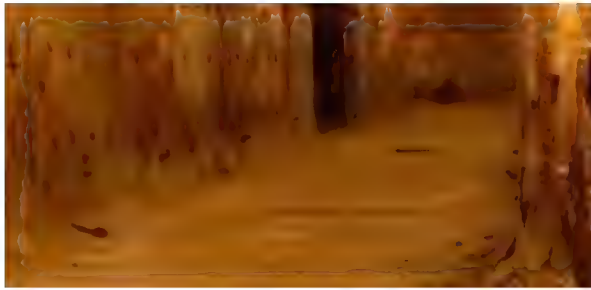






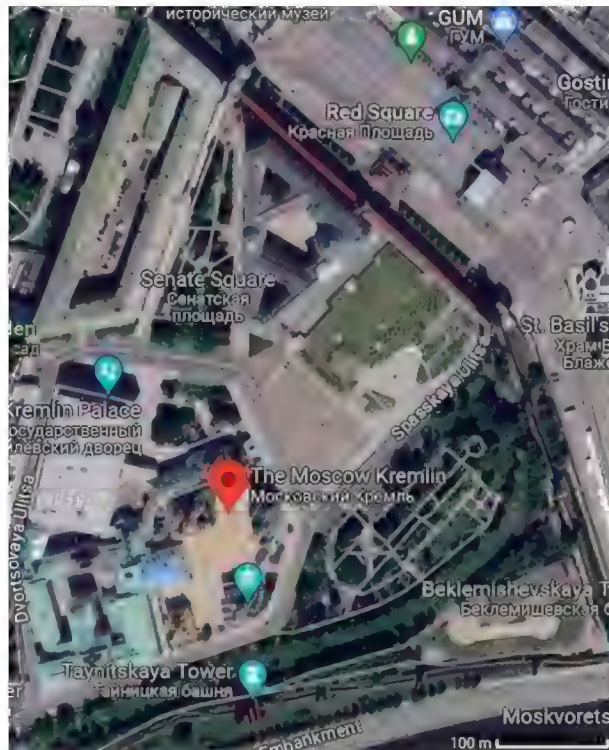




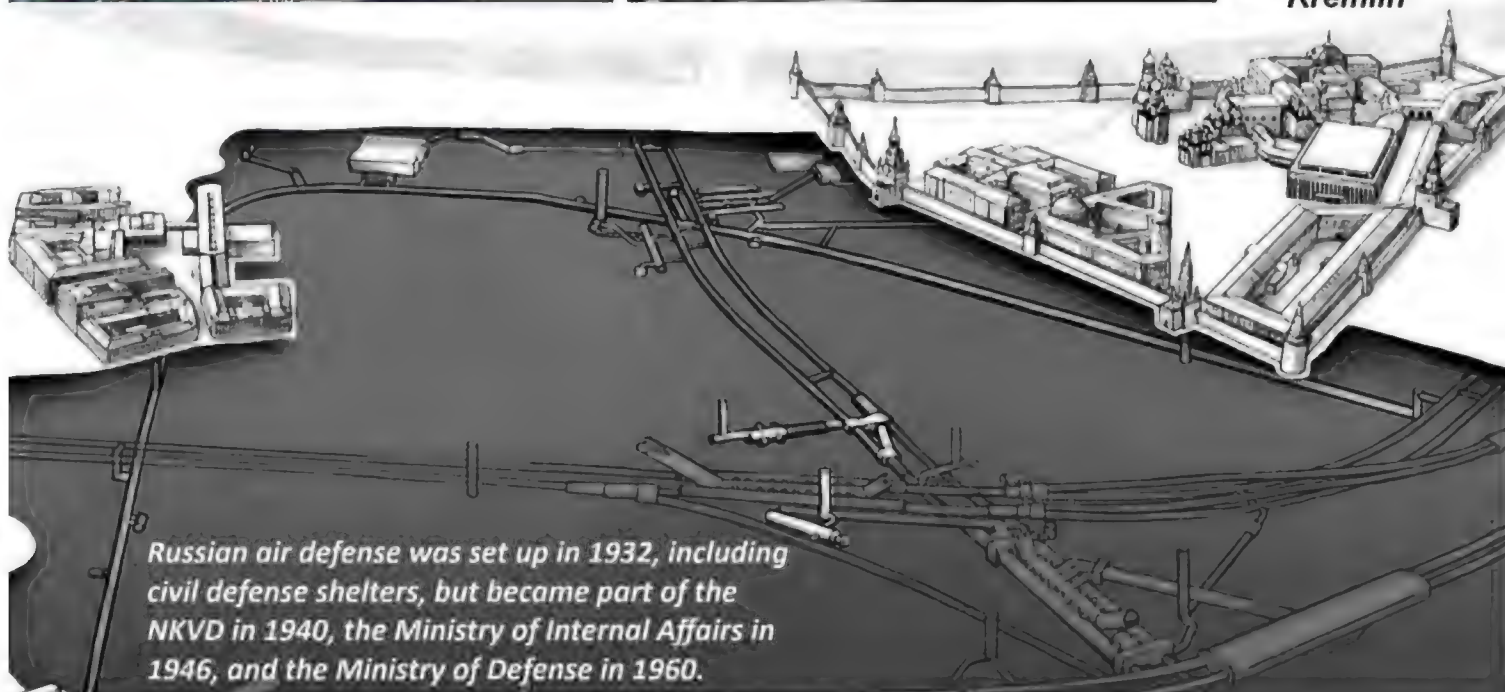




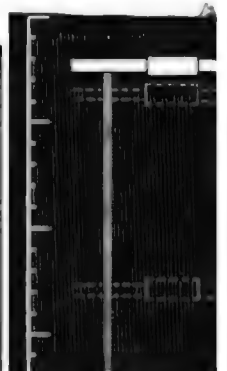




**Underground  
connecting  
tunnels for  
safe evacuation  
of the Kremlin**



*Russian air defense was set up in 1932, including civil defense shelters, but became part of the NKVD in 1940, the Ministry of Internal Affairs in 1946, and the Ministry of Defense in 1960.*











**UK's last tactical nuclear WE177 destroyed: 31**



**25 kt composite core (Pu239 within U235)  
tactical air burst on 9 October 1957, held by  
balloon at 300m altitude, Maralinga**



**800 kt double-secondary ("Penney's full Tom, Dick  
and Harry", all spherically shaped) strategic air burst on  
11 September 1958 at 2.65km altitude, Christmas Is.**







**First plutonium hemisphere for 3 October 1952 Hurricane nuclear test, cooling inside a radiation proof glove box (glove port in thick glass window for hand insertion is visible at right), building A1.1, taken on 23 July 1952. Both hemispheres were flown out to Monte Bello by Sunderland flying boat.**

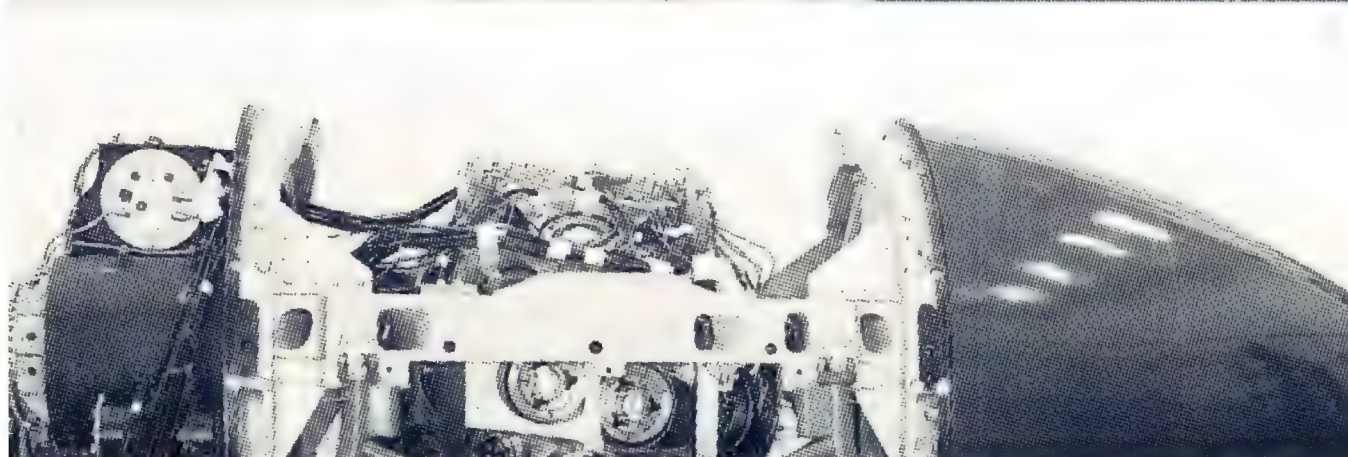
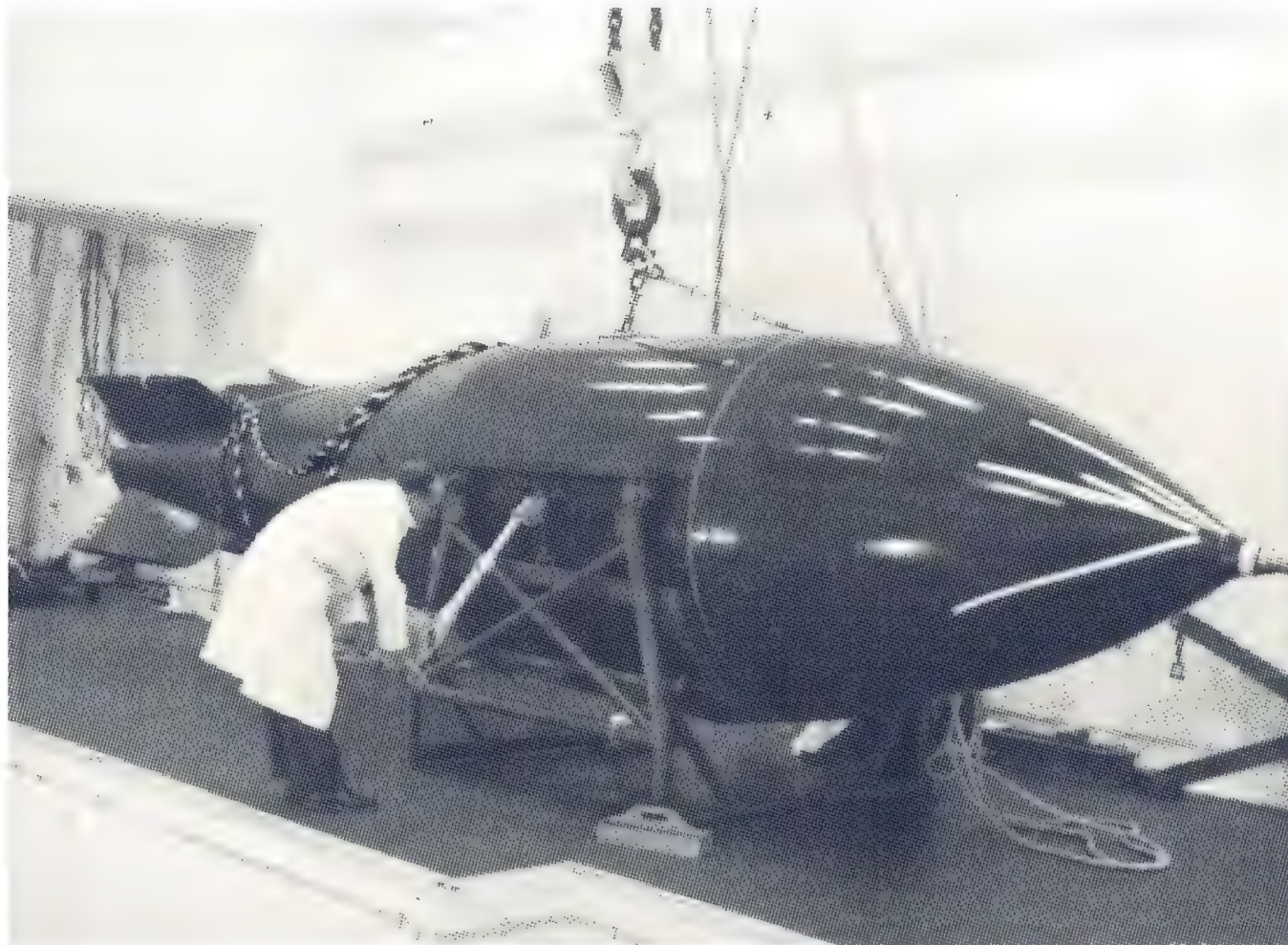


**HMS Plym, a wartime convoy frigate of 1,450 tons, was loaded with a nuclear weapon and blown up with 25 kt yield on 3 October 1952 at Monte Bello, Australia, to simulate the effects of a clandestine Russian surprise attack on a harbour or military port in the model of the 1941 Pearl Harbor knockout blow.**

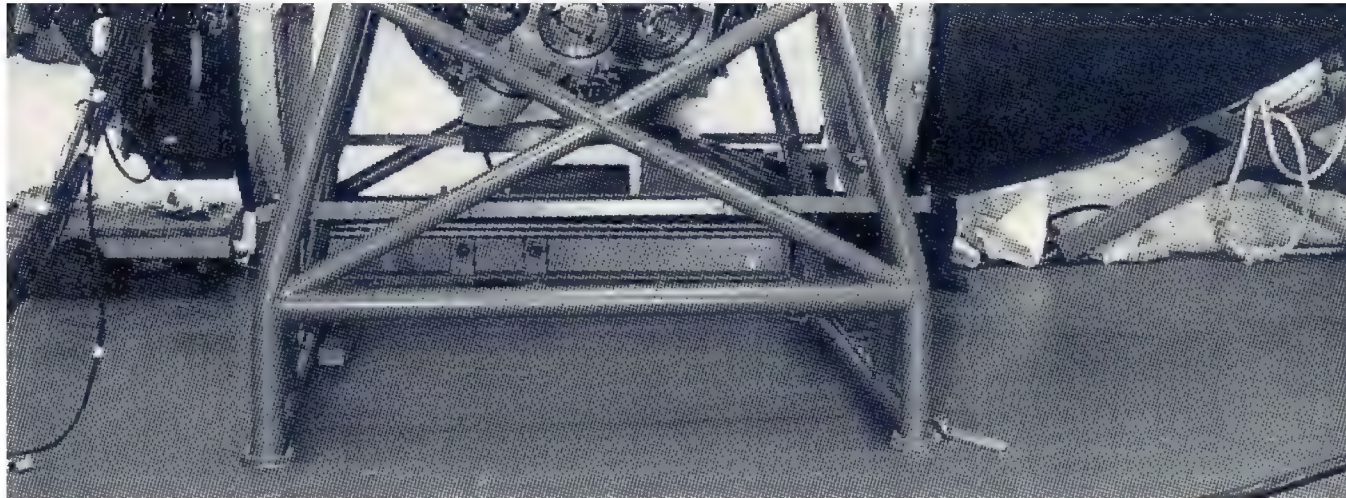


**The first British (above, being a Farnborough in Simple implosion hexagons for I**









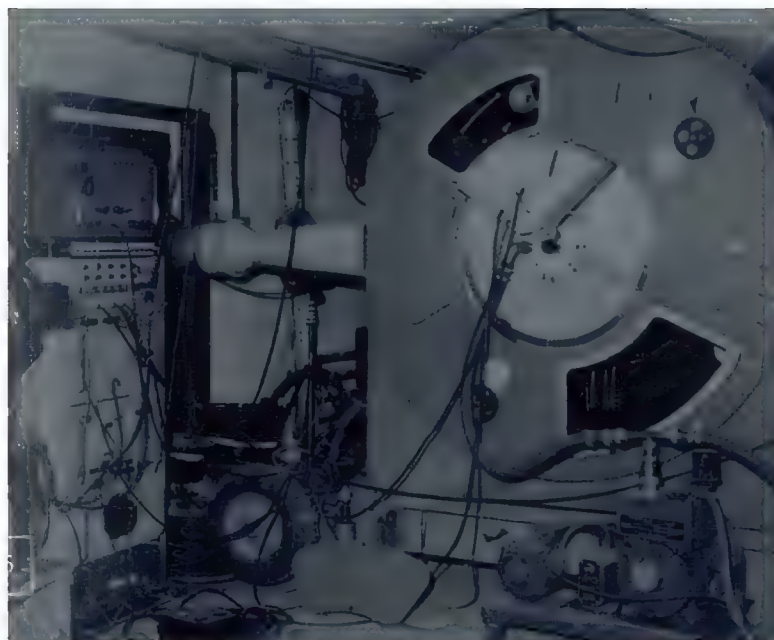
## **UK "GREEN GRASS" IMPLOSION DEVICE INSIDE BLUE DANUBE**



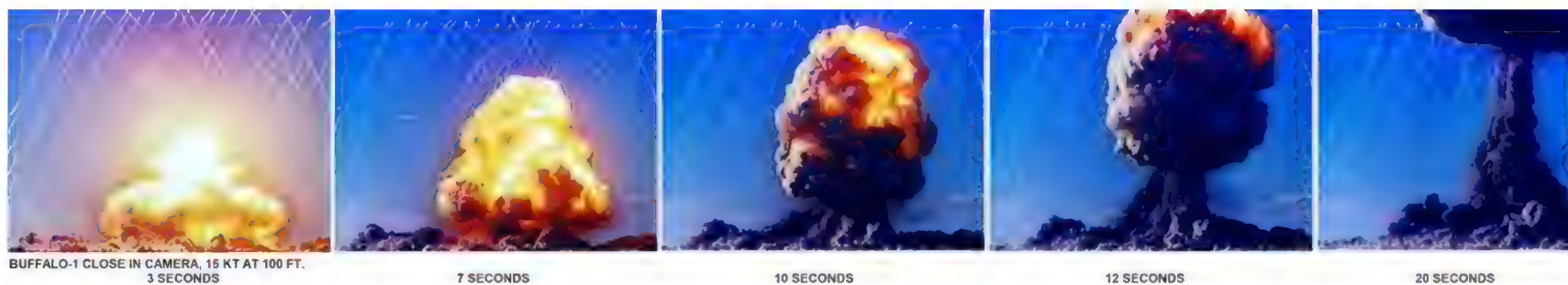




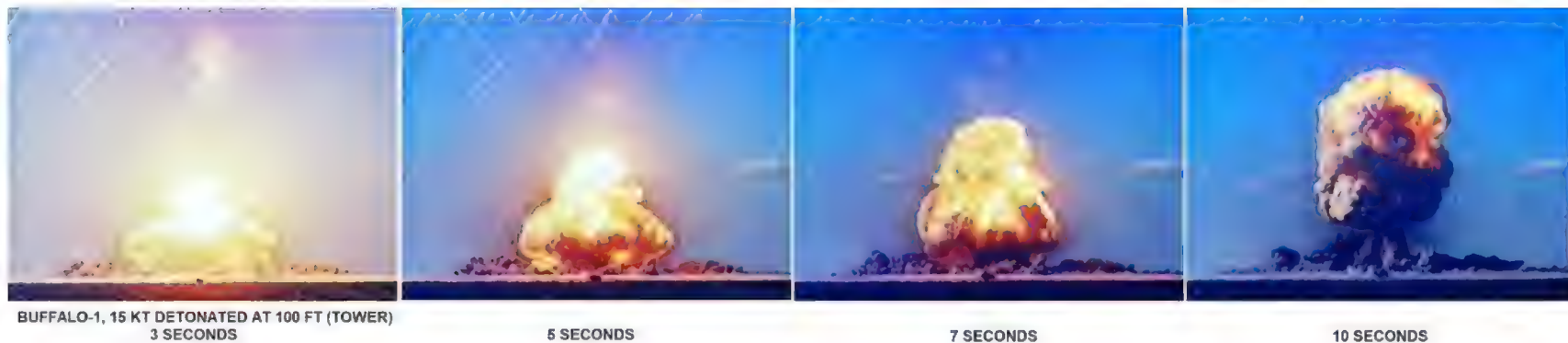
**3 Mt air burst Grapple Y, 28 April 1958, Christmas Is.**



**UK's 1952 AWRE Kerr Cell fireball cine camera with time resolution of 0.1 $\mu$ S (UK alternative to USA Rapatronic still photo technique)**







*Buffalo-1 blast on Daimler scout cars*





***Operation Antler, Maralinga***  
**Dummies - standing and prone**  
**cinema camera blast effect film**



***Operation Antler, Maralinga, 1957.  
Nuclear blast effects on personnel  
(dummies) in cars***











ABOVE: **British 1959 summary of the effects of nuclear weapons on military equipment, based on extensive British nuclear test data.** This information has been **declassified in the 1959 book *An introduction to nuclear weapon effects* (UK War Office WO Code: 9612), available in the UK National Archives as document WO 279/476 - see <https://discovery.nationalarchives.gov.uk/details/r/C1806524>** - it is also well known to the Russians, Chinese et al., who have conducted such tests, yet is not included in the American Glasstone and Dolan nuclear effects bible: this is the key data for credibly deterring the invasions behind world wars. Without the full nuclear weapons effects facts being in the public arena, ill informed anti-nuclear people can campaign to disarm Western tactical nuclear weapons, thus enabling Putin to invade Ukraine and other countries. The photo below of the 1955 Nevada tested suitcase bomb Cleo II (Cleo II was tested as 2 kt Teapot-Post on 9 April 1955, 34.2" long, weight 322 lb) being used as a lunch table in the back of a station waggon on route to the bomb tower, is from Tom Ramos's 2022 book "How the Rad Lab helped avert nuclear war", which explains Cleo's linear implosion shape was too complex to simulate on computers, so Foster had to use many non-nuclear explosive "hydrotests" using depleted uranium cores: "The committee noted the multidimensionality of the Cleo made it difficult to model on a computer; its design pushed into areas of physics not well understood." Ramos also writes on pages 118-121 (his end notes say he read the secret test notes on this to confirm it) that Edward Teller's Lawrence Livermore Laboratory's 110 kt Castle-Koon test failed to yield the desired 1 megaton because the (rival) Los Alamos primary fission stage used in it yielded only half the x-rays needed to compress it: "Montgomery Johnson ... determined the calculations of energy flowing throughout the device had been wrong ... comparisons of the radiative transport calculations with measurements of the output of the Los Alamos primary had shown they differed by a factor of two. The device's design had been based on those calculations..."



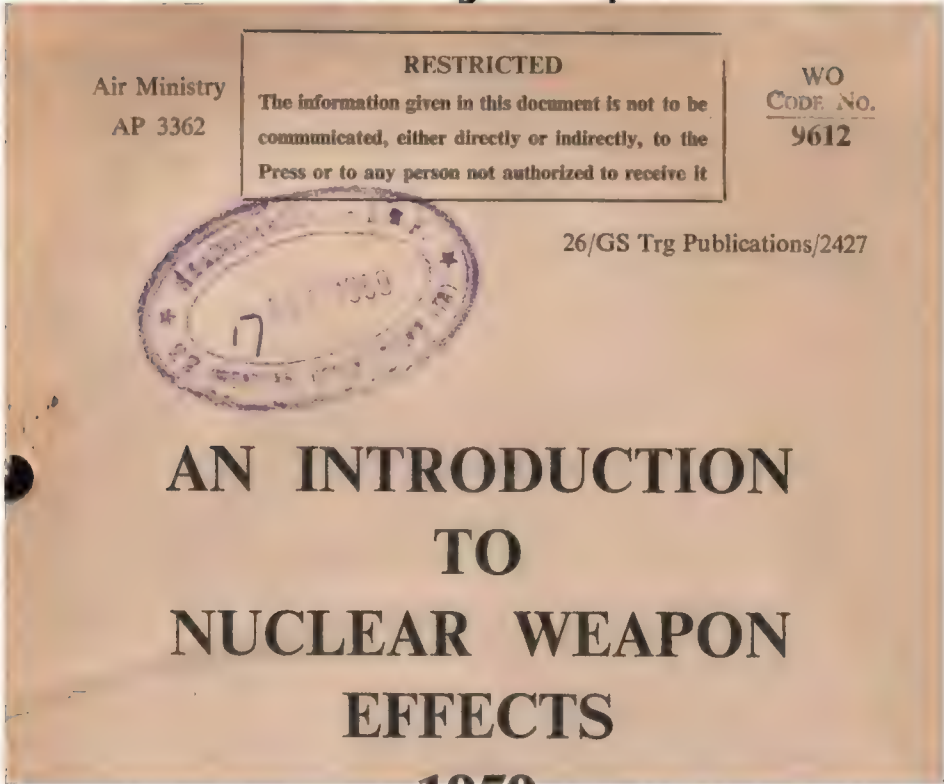




**BUFFALO-1: Severe damage to Supermarine Swift**

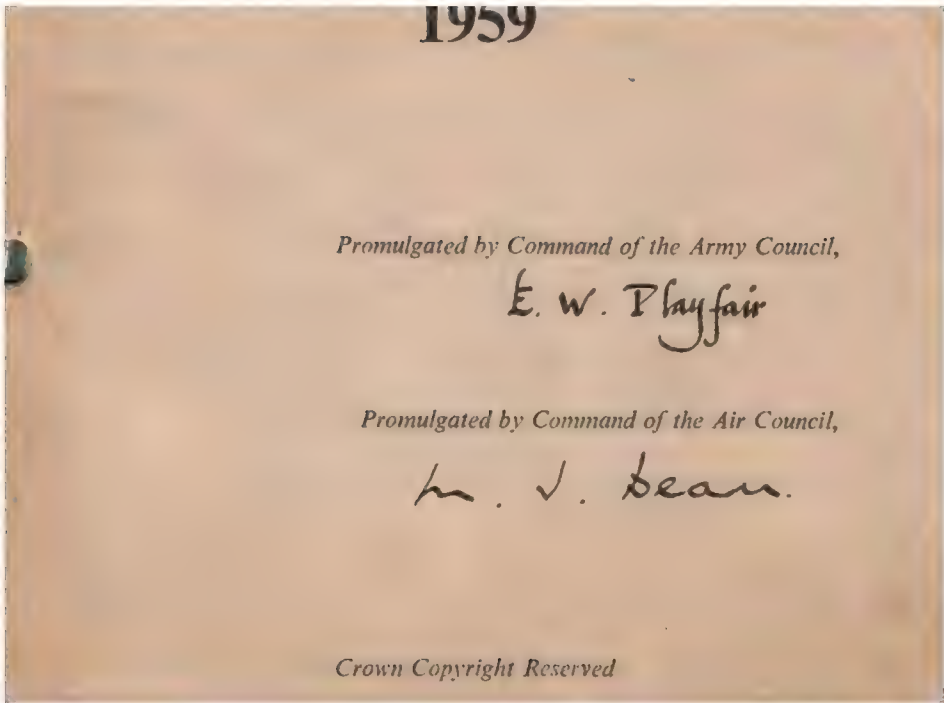


**Operation Antler, Maralinga, 1957.**



**TABLE II.—Target response table for military equipment (for 20 KT and 1 KT weapon)**

Equipment	Approximate peak Overpressure (psi) <sup>1</sup> (Taken from 20KT near surface burst results) <sup>2</sup>	Equivalent scaled psi for a 1 KT
Heavy tanks .. .. .	55	85
	30	50
Scout cars .. .. .	30	50
	20	28
	12	17
B vehicles .. .. .	15	21
	10	14
	7	10
Field artillery (in open) .. ..	20	28
	15	21
	10	14
Field artillery (in gun pit) ..	20	28
Heavy mortars .. .. .	40	75
	15	21
Heavy girder bridges (side on) ..	20	28
Wireless sets .. .. .	15	21
	10	14
	3	4
4 men fire position—		
LMG embrasure and shelter ..	30	50
	18	27
	8	13
Main trench .. .. .	30	50
Aircraft parked—		



Aircraft parked—					
Bomber	..	..	..	5±2	7±2
Fighter	..	..	..	12	17
Aircraft airborne	..	..	..	10±5	14±7

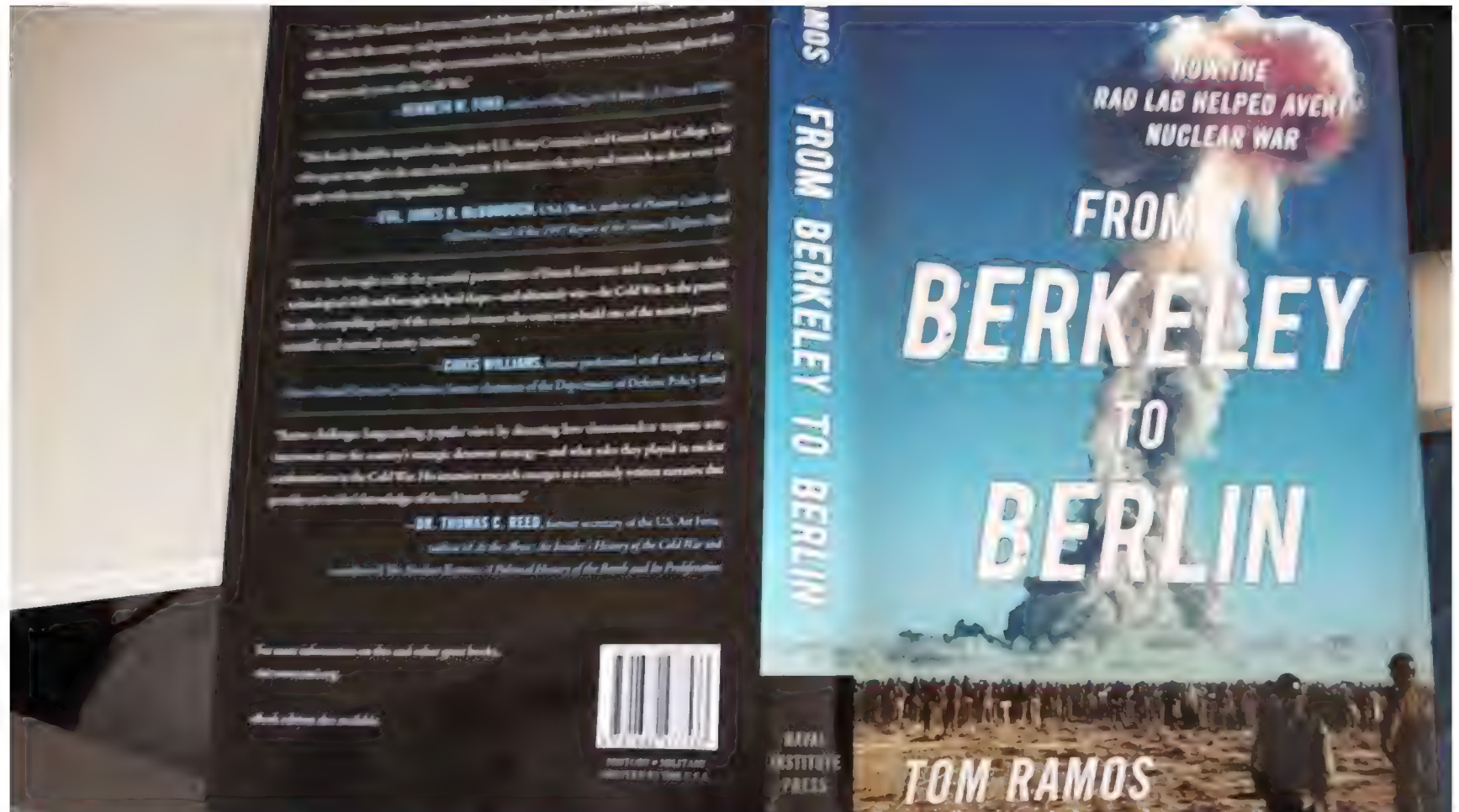
Men (but remember other accompanying effects)

Men standing in open				8	13
				5	7
				3	4
Men laying in open				12	17
				9	14
				6	8
Men in revetted trenches				20	28
				8	13

Damage level criteria for equipment

1. *Light damage*.—Will not interfere seriously with immediate and some repair to restore to full use.
2. *Moderate damage*.—Requires repair facilities available in field
3. *Severe damage*.—Requires base repair.

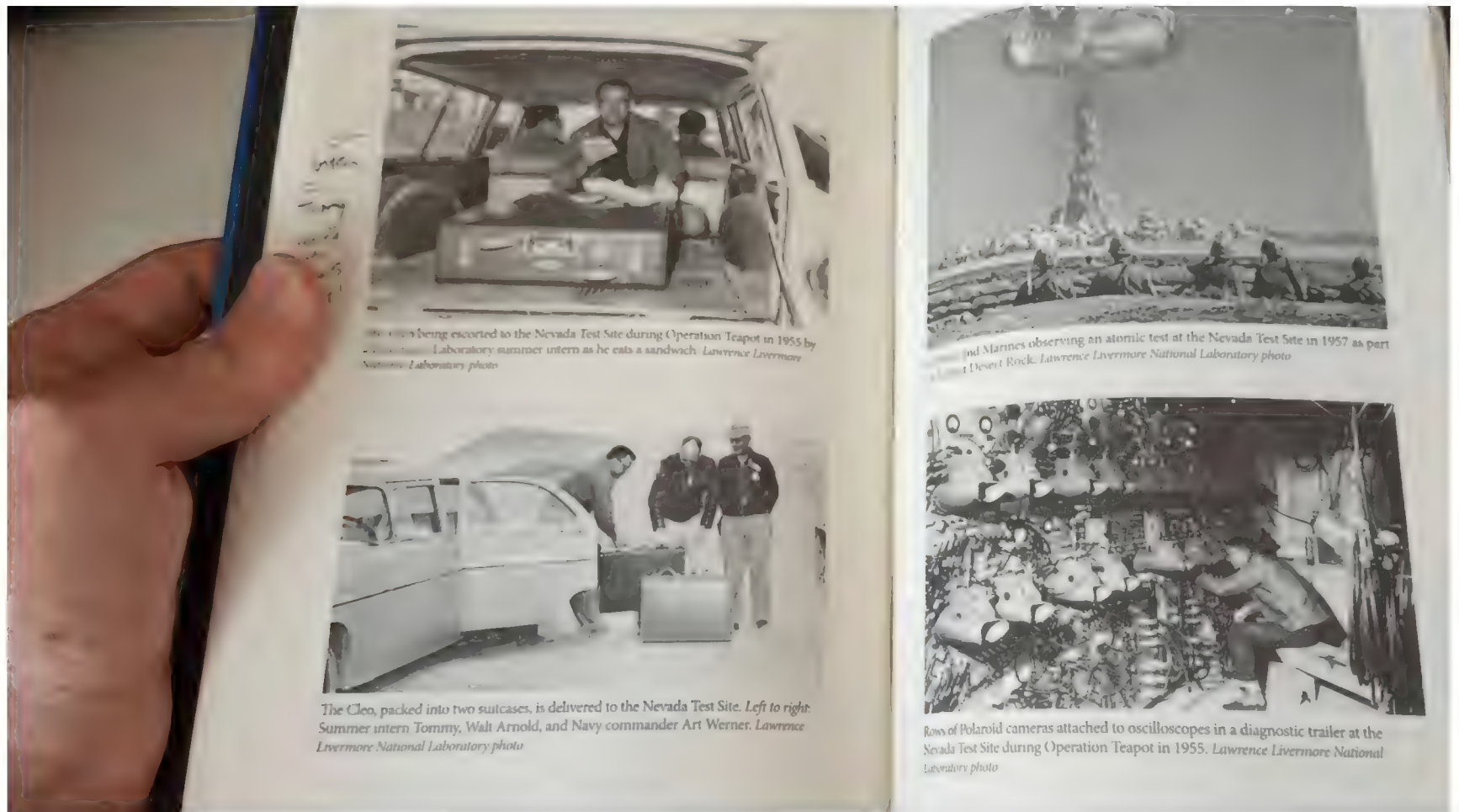
<sup>1</sup> For associated dynamic pressures, see Table III.  
<sup>2</sup> Normalized for non-desert terrain.

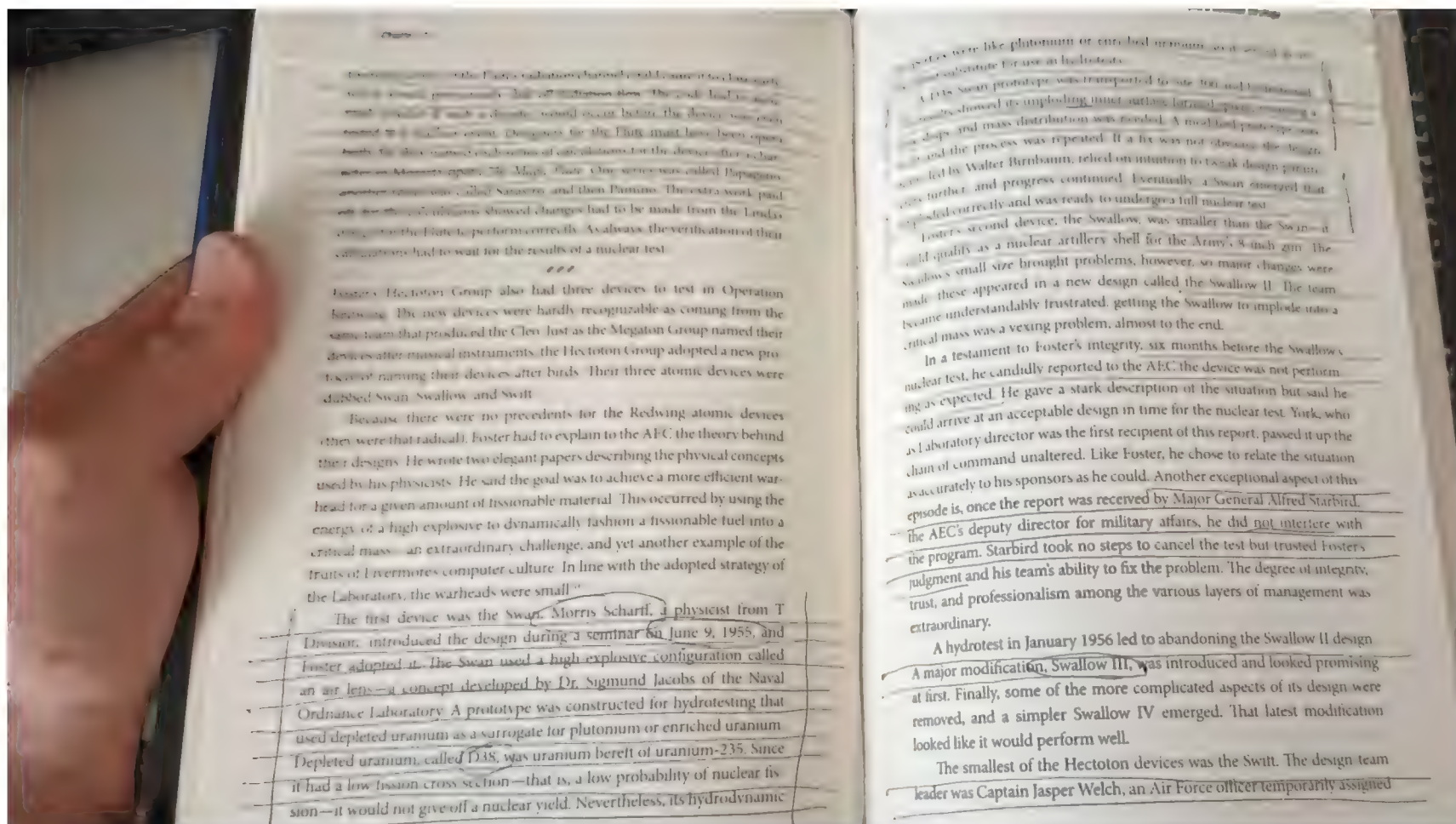














British Army 1959 nuclear weapons effects protection film ...



*Double bl  
nuclear w*

**SOURCE:**  
<https://www.1/v-moskna-sluchai>

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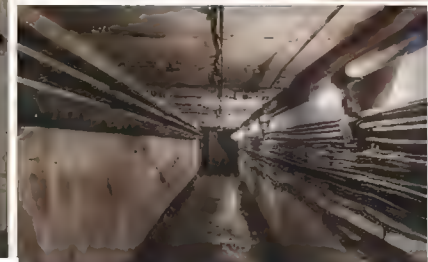
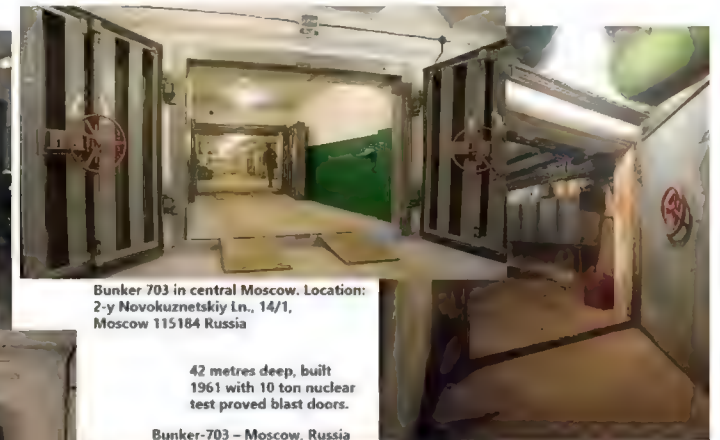




Bunker-42, underground Red Carpet secret military facility, Moscow.

This Soviet bunker was built 65 meters beneath Moscow in 1951 and finished in 1956. In the case of a nuclear attack around 600 people could take shelter for 30 days, thanks to the bunker's stockpile of food, medicine and fuel. Workers were able to comm using a secret midnight train that ran from Taganskaya metro station.

NEWS <https://www.mirror.co.uk/news/world-news/wealthy-russians-scramble-build-nuclear-28271460>

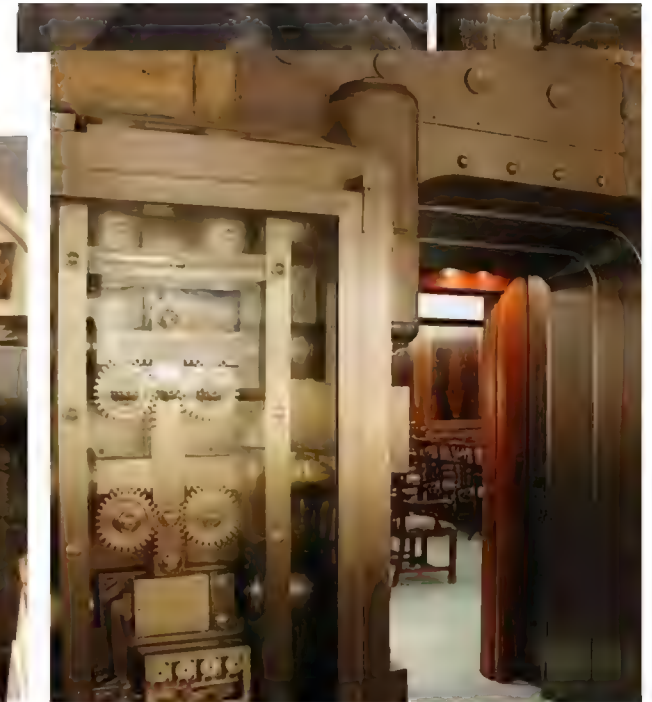


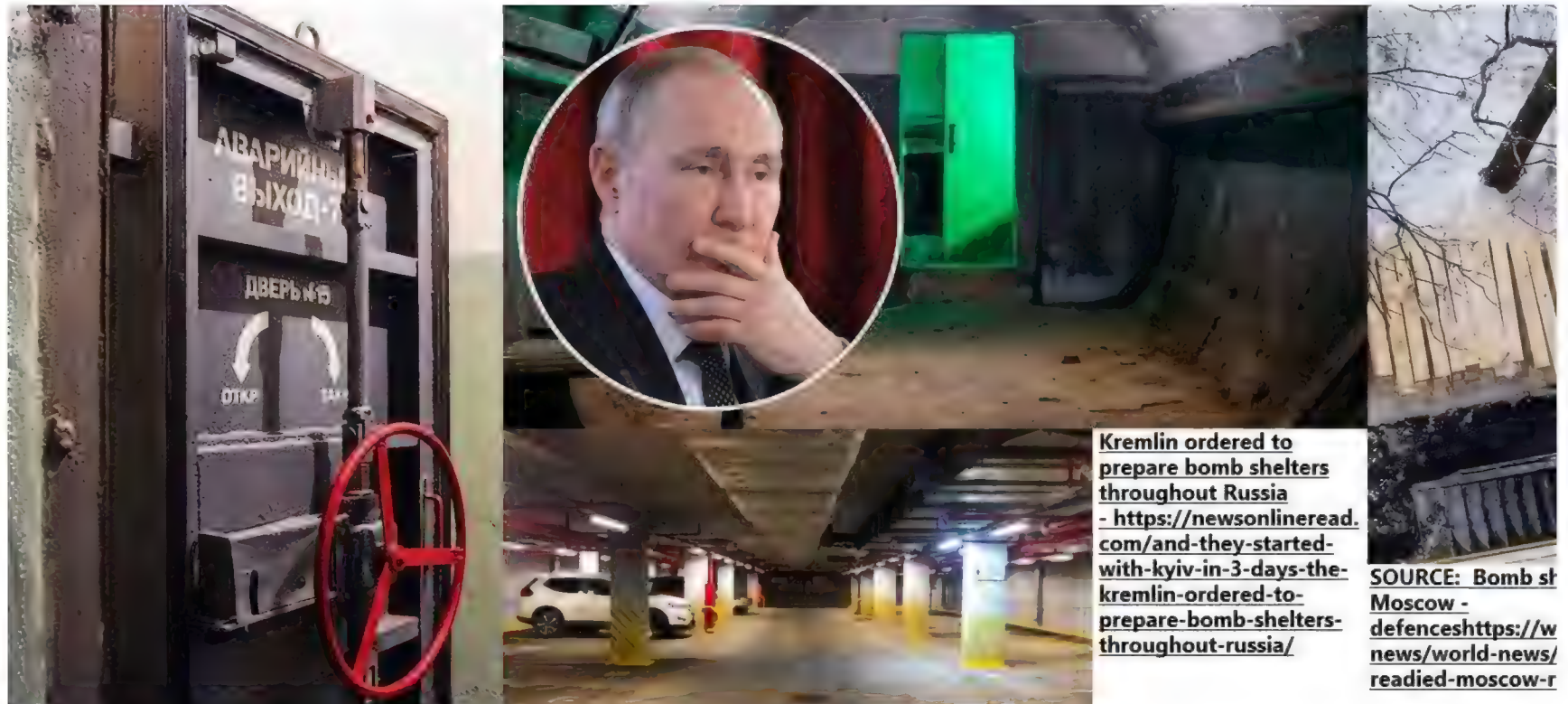


Photos by Moscow construction worker Mikhail Bratza: Moscow's Site 1 nuclear bunker has two-foot-thick steel reinforced doors, 75 toilets and bathroom capacity for 200 people to wash at once. Russian bunker 650-feet underground holds 2,700 Moscow people in a nuclear attack.

RIGHT: transparent inner panel on a blast door, showing internal mechanism

SOURCE: <https://www.thesun.co.uk/news/20144544/doomsday-bunker-frenzy-russians-shelters-nuclear-war/>

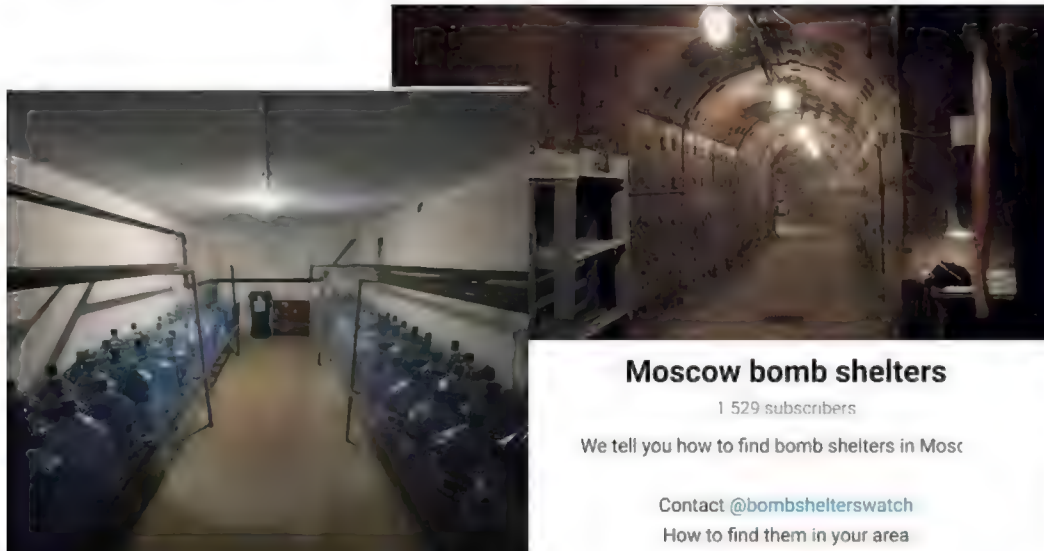








**Entrance to Russian thermonuclear bomb shelter in Moscow disguised as entrance to underground parking garage**  
Source TASS: 19536579



### Moscow bomb shelters

1 529 subscribers

We tell you how to find bomb shelters in Moscow

Contact [@bombshelterswatch](#)

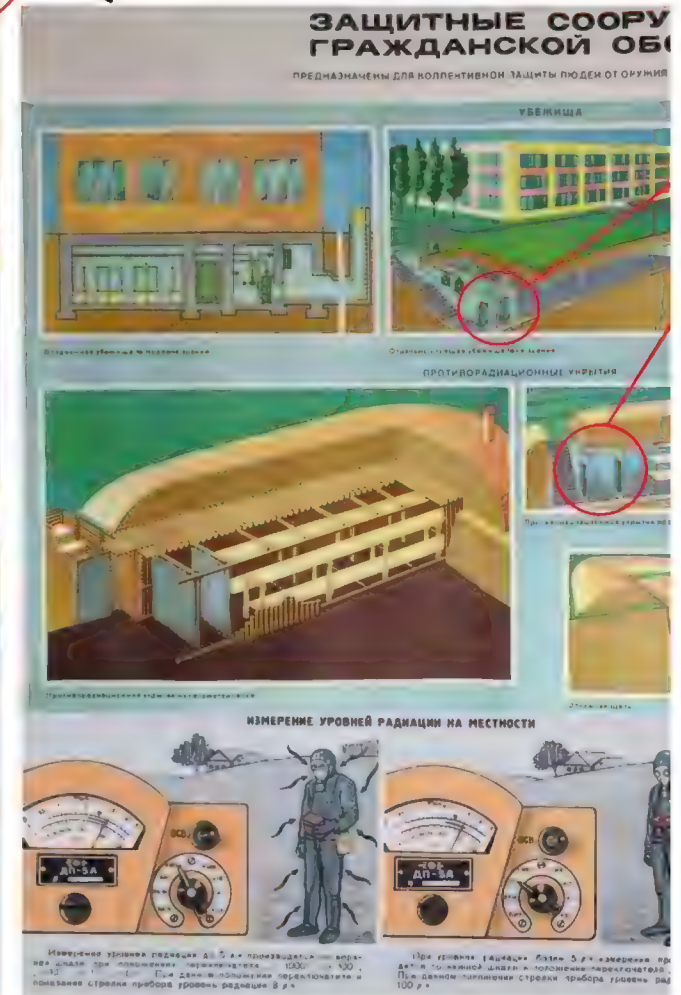
How to find them in your area





**exit/air vent  
of basement  
shelter**

RUSSIAN CIVILIAN  
SHOWING CLOSED  
DOORS AT FIRE  
EXITS, INDICATING  
TEST PROVED



ABOVE: CIA-declassified testimony from 1985 (linked [here](#)) states that Russia built 800-1,500 relocation shelters for government officials, in addition to public basement shelters and subway shelters and evacuation/dispersal plans for a crisis (in WWII, the Russian government relocated from Moscow to Kuybishev, where there is now a deep shelter under dry soft rock). The U.S. Department of Defense's April 1988 edition of Soviet Military Power: An Assessment of the Threat at pages 59-61 adds that **Russia built secret subway**

lines,



Declassified and Approved For Release 2012/12/10 : CIA-RDP95M00249R000801130021-6

SOVIET STRATEGIC FORCE DEVELOPMENTS

TESTIMONY BEFORE A JOINT SESSION OF THE SUBCOMMITTEE  
ON STRATEGIC AND THEATER NUCLEAR FORCES OF THE  
SENATE ARMED SERVICES COMMITTEE

AND

THE DEFENSE SUBCOMMITTEE OF THE SENATE COMMITTEE ON APPROPRIATIONS

JUNE 26, 1985

BY

[www.cia.gov/readingroom/docs/CIA-RDP95M00249R000801130021-6.pdf](http://www.cia.gov/readingroom/docs/CIA-RDP95M00249R000801130021-6.pdf)

ROBERT M. GATES  
CHAIRMAN, NATIONAL INTELLIGENCE COUNCIL, AND  
DEPUTY DIRECTOR FOR INTELLIGENCE  
CENTRAL INTELLIGENCE AGENCY

LAWRENCE K. GERSHWIN  
NATIONAL INTELLIGENCE OFFICER FOR STRATEGIC PROGRAMS  
NATIONAL INTELLIGENCE COUNCIL

**PAGE 2:**

Soviet leaders are attempting to prepare their military forces for the possibility that they will actually have to fight a nuclear war. They have seriously addressed many of the problems of conducting military operations in a nuclear war, thereby improving their ability to deal with the many contingencies of such a conflict.

We judge that the Soviets would plan to conduct a military campaign that would seek to end a nuclear war on their terms--by neutralizing the ability of US intercontinental and theater nuclear forces to interfere with Soviet capabilities to prevail in a conflict in Eurasia.

**PAGE 6:**

**PAGE 9:**  
 nicknamed "Metro-2", extending from the Kremlin in Moscow out to relocation shelters 60 km away such as that at Sharapovo, 60 km South of Moscow (see **Leadership Protection** secret railway line on page 43 of DTIC report ADA243946, linked here.) Bruce Blair in his 1993 Brookings Institution book, *The Logic of Accidental Nuclear War*, pages 133-140, compares this data with other sources, and analyses the implications in terms of **the massive exaggerations by Glasstone and Dolan on crater/ground shock effects to buried leadership**. We judge that, with as little as a few hours' warning, a large shelter centred on the wartime management structure would survive the initial

effects of a large-scale US nuclear attack. We estimate there are at least 800, perhaps as many as 1,500, relocation facilities for leaders at the national and regional levels. Deep underground facilities for the top national leadership might enable the top leadership to survive--a key objective of their wartime management plans.

### PAGE 10:

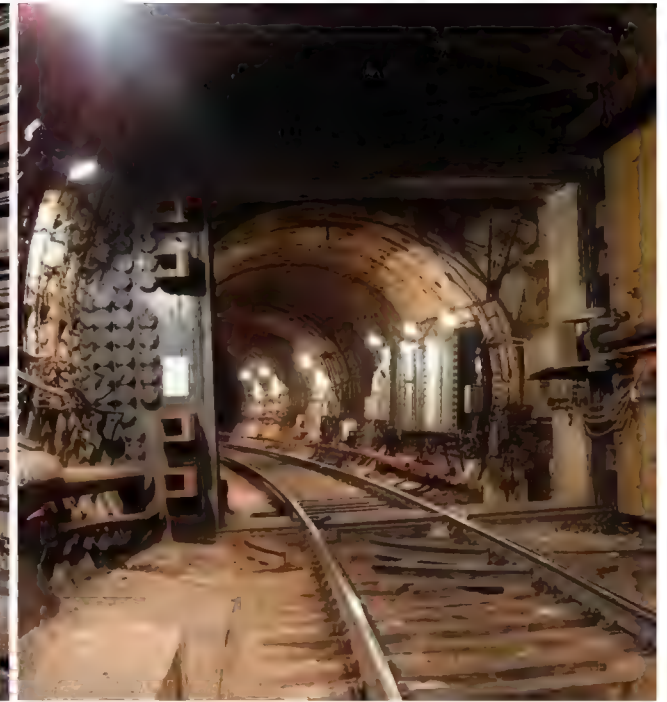
Soviet leaders view arms control policy as an important factor in advancing their strategy of achieving strategic advantage. They have been willing to negotiate restraints on force improvements and deployments when it served their interests. Moscow has long believed that arms control must first and foremost protect the capabilities of Soviet military forces relative to their opponents. The Soviets seek to limit US force modernization through both the arms control process and any resulting agreements. A salient feature

ABOVE: Blast door at Komsomolskaya ("Комсомольская") Metro Station on the Koltsevaya line, Krasnoselsky District, Central Administrative Okrug, Moscow (average depth of Moscow metro is 45 metres; **this station is at 37 metres depth and so provides excellent nuclear effects resistance at very high peak overpressures and radiation fields**). Notice the curved track on the floor on the the blast door on the right would be swung shut by a hydraulic ram (located behind it!). The blast doors and their hydraulic mechanisms are similar to the silo blast doors that protect large ICBMs from several thousand psi peak overpressure at ground zero, although the shelters have several blast doors, and giving greater protection. It is a nicely camouflaged Russian civil defense system! (Photo source: <https://www.oneman-onemap.com/en/2017/08/08/the-moscow-metro/>) Bruce Blair, *Logic of Accidental Nuclear War* (pages 134-140):

"These exurban deep underground command posts were connected to the deep underground post at the Kremlin by a special subway line. Two other special subway lines branched out from the Kremlin. One wound through the Ramenki area deep underground command post southwest of Moscow State University, and on to exurban deep posts farther to the South West of the city. The other ran 25 km East to a deep underground complex housing the national air defense HQ. ... the most heavily fortified allegedly could withstand blast overpressures as high as several thousand pounds per square inch. ... a very deep command centre beneath the Kremlin ... in the early 1980s earned a Lenin Prize for former general secretary Chernenko. The largest underground complex ... was situated at Ramenki at an estimated depth of 650-1,000 feet. It could accommodate 10,000 people. ... Recently the U.S. Department of Defense **reviewed the pertinent historical evidence gathered during nuclear tests and developed new models** of the vulnerability of underground structures to nuclear explosions. These calculations differed substantially from those derived from earlier models. ... the dimensions of a crater produced by a nuclear explosion were estimated to be considerably smaller than previously thought. ... the radius of a crater produced by a 1 Mt nuclear explosion on the surface of wet soil [crater radii will be only 58.3% this size in Moscow's wet soft rock, which is tougher to





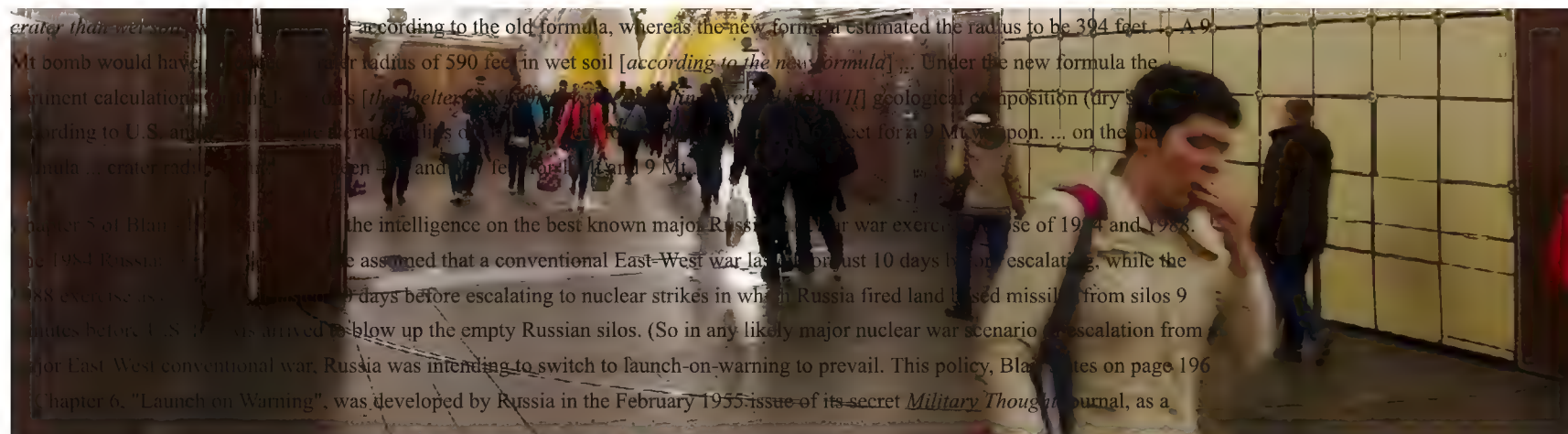


MOSCOW'S NUCLEAR BLAST DOORS



MOSCOW'S NUCLEAR BLAST DOOR





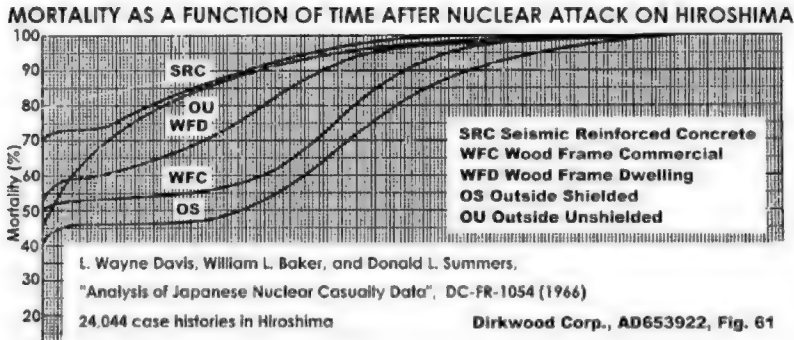
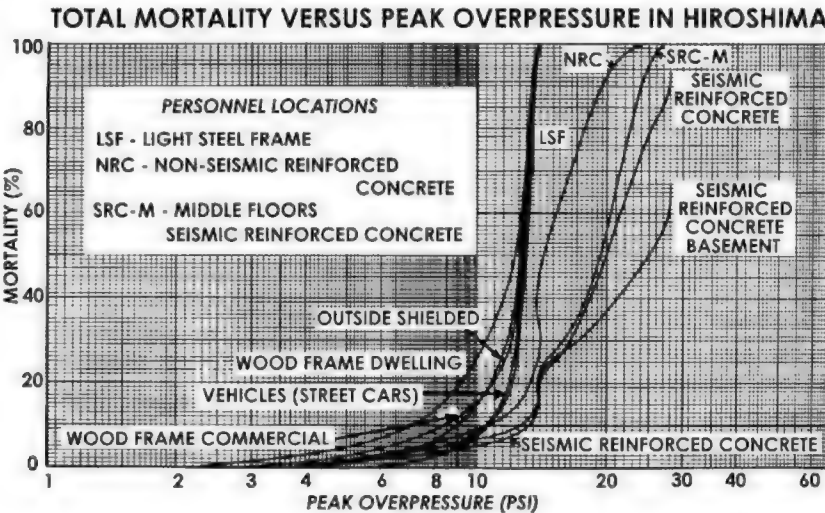
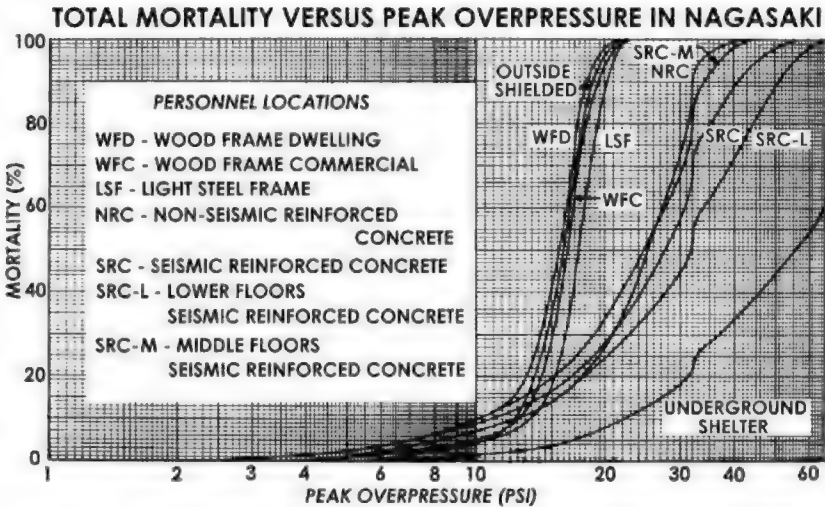
countermeasure to prevent the success of a surprise strike during a crisis.) Blair also on page 26 quotes Henry Kissinger's advice that in a crisis you should escalate "rapidly and brutally to the point where the opponent can no longer afford to experiment" (quotation source is Kissinger's *White House Years*, 1979, p622). Blair comments (based on the experiences of the failure of gradual escalations prior to WWI and WWII by appeasers and misinformed idealists): "Henry Kissinger argued that what seems balanced and safe in a crisis is often the most risky because because a too temperate, deliberate, and predictable course allows the adversary to match every move, thereby prolonging the conditions of inherent risk. His prescription was to exploit the adversary's reluctance to play nuclear roulette ... the crisis may be brought to a quick and favourable resolution. Kissinger practised this philosophy of crisis management during the 1973 Middle East crisis by declaring a global U.S. nuclear alert in the hope that it would deter the Soviets from intervening unilaterally to save the trapped Egyptian army ... a ploy to convince the Soviets of our willingness, if necessary, to run a risk of nuclear war in order to prevail."

*This is relevant to the UK Government policy in August 1914 and from 1933-39, when its "speak softly and carry a big stick" diplomatic policy (a phrase mentioned by President Ted Roosevelt as being a useful West African proverb) failed to deter world wars. Speaking softly undermined the credibility of the big stick for deterrence: the opponent has to believe it to be a credible threat, which means you must convince your opponent of your desire to use the stick to enforce your will. In the end, Britain in both cases declared war first, after convincing its opponent that it was committed to peaceful coexistence. Being nice to a monster may turn the monster "nice" in the fairy tales of "arms controllers and disarmers", but in the real world it encourages and rewards aggression. Anyone pointing out this fact of human nature was secretly attacked by underhand methods by Chamberlain's thugs, e.g. pressure on the publisher of Popular Flying resulted in editor Johns being fired in 1939 for writing editorials critical of appeasement and efforts were made to de-select Winston Churchill, MP. The pro-Chamberlain lying propaganda continues, driven by disarmament liars, who believe in lying about anything, particularly civil defense and weapons effects, to get peace at the price of despotic genocide and slavery, the Pyrrhic "victory" of fools.*





Hiroshima



Left: the Dirkwood Corporation analysis of the mortality rates as a function of peak overpressure in Nagasaki and Hiroshima is based on 24,044 traced case histories in Hiroshima and 11,055 in Nagasaki (a total of 35,099 cases). The report by L. Wayne Davis, William L. Baker, and Donald L. Summers, "Analysis of Japanese Casualty Data", DC FR 1054, AD653922 (1966), summarises the effects versus distance.

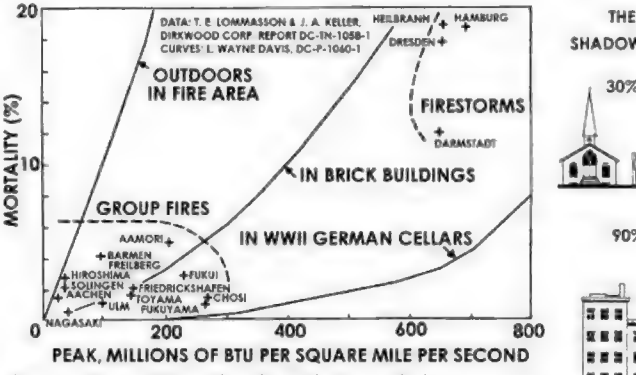
A classified report by L. Wayne Davis, et al., "Prediction of Urban Casualties and the Medical Load from a High Yield Nuclear Burst", Dirkwood Corporation paper DC-P-1066 (1968), compares the peak overpressures for the casualties in each city to those from the main Texas City Disaster surface burst explosion of 1947, when 0.67 kt of explosive in a ship detonated after a fire. (This is corrected for the effective explosion energy, which was less than the total mass of explosive involved because some was on a nearby dock and did not explode simultaneously, and some burned without detonating.) Comparison of mortality versus peak overpressure curves for different events shows the influence of nuclear



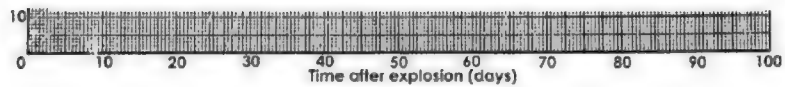
BANK OF JAPAN, HIROSHIMA (BUILDING 24)



GEIBI BANK COMPANY, HIROSHIMA (BUILDING 18)



Honest Effects of Nuclear Weapons!



radiation and the  
firestorm at Hiroshima  
on total casualty rates.

Above: nuclear explosions do not provide burning fuel like incendiary  
air-raids on wooden cities, and hijacked aircraft hitting the Twin Towers  
on 11 September 2001 (where burning aviation fuel melted the steel  
frame) At Hiroshima, shadowing protected most window contents.



SOURC



# DSO<sub>2</sub> Dosimetry Hiroshima HOB = 600 m; Y = 16 kt

**UNSHIELDED DOSES (TRIVIAL ON LOWER FLOORS OF MODERN CONCRETE MULTISTORY BUILDINGS)**

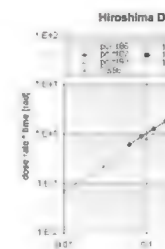
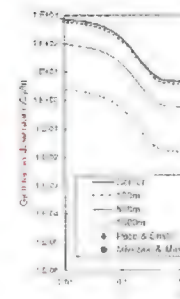
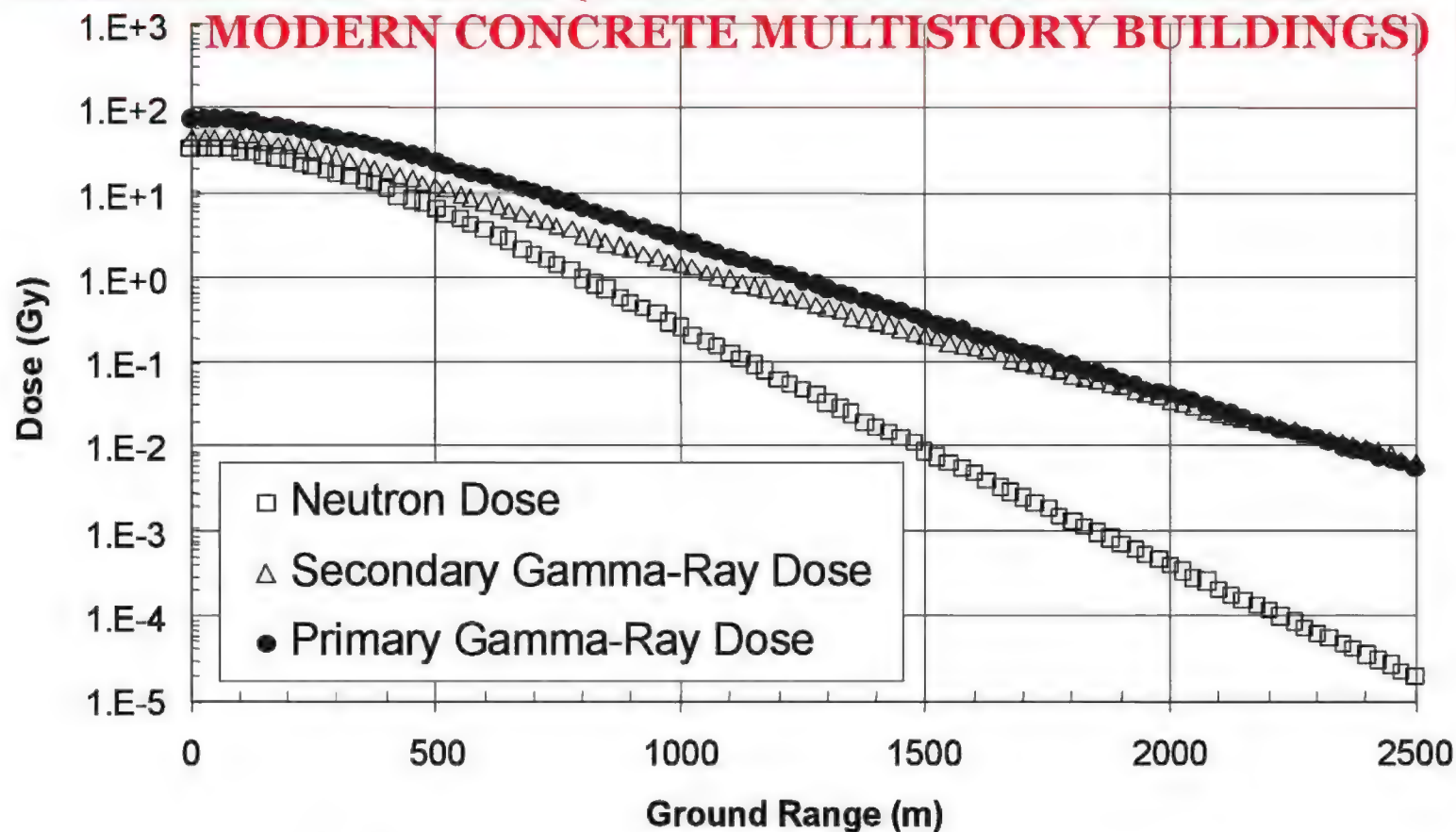
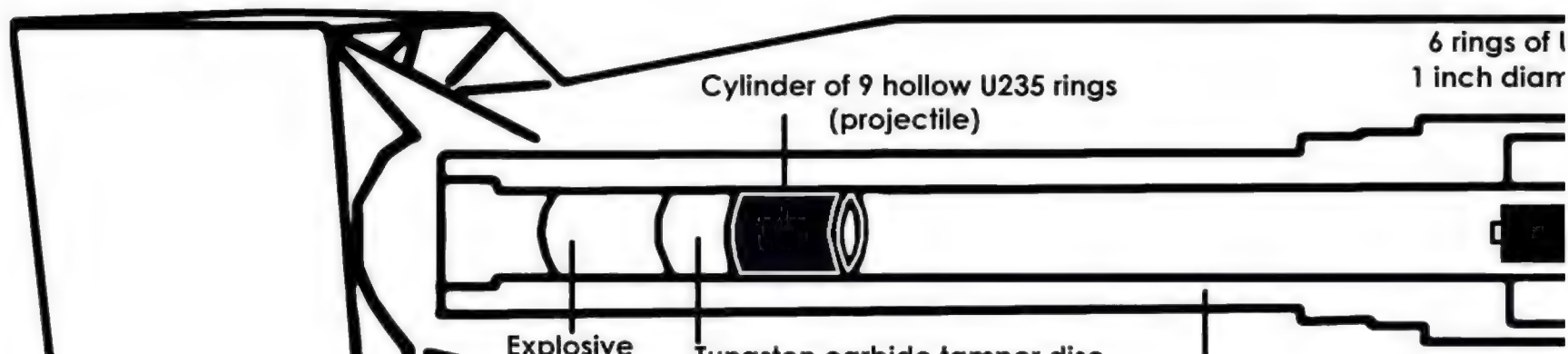
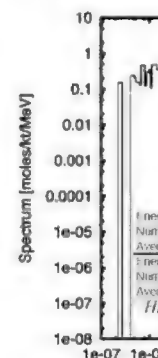
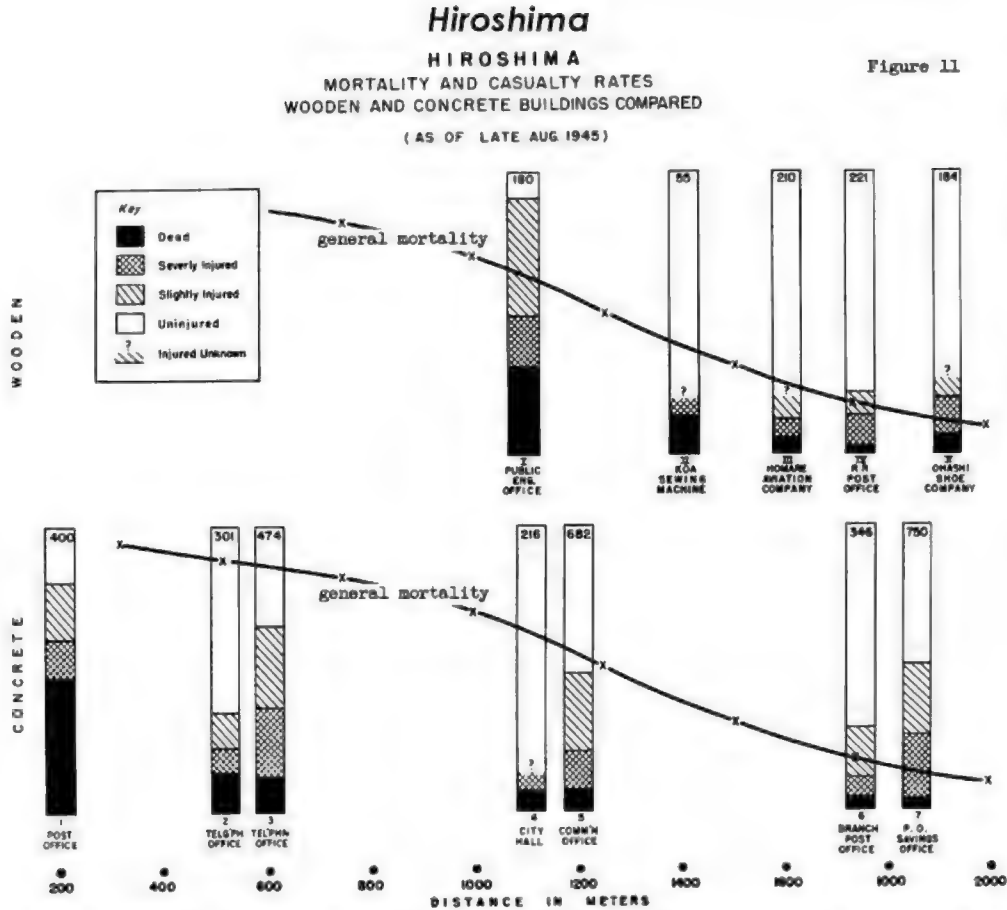


Figure 35. Comparison of calculated and measured dose rates for Hiroshima.









Above: Fig. 12 from Ashley W. Oughterson, et al., *Medical Effects of Atomic Bombs: The Report of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan*, Volume VI, U. S. Army Institute of Pathology, NP-3041, 1951, comparing the overall general mortality for Hiroshima with the mortality inside wooden and concrete buildings. *Hiroshima's obsolete wooden houses had a higher mortality than concrete buildings.*

Table 12 of that report is the basis of most of the data in Table 12.21 on page 547 of the 3rd edition (1977) of Glasstone and Dolan's book, *Effects of Nuclear Weapons*, which averages Hiroshima survival data for concrete buildings and correlates it to "degrees of damage," not distance. *This correlation can be deceptive, because some casualties in concrete buildings were not due to blast effects, but due to nuclear radiation, which predominated on the upper floors, where there was less shielding from the air burst overhead than for the lower floors.* Most fire damage to these buildings

by which time most survivors had evacuated, so the fire damage in concrete buildings did not determine casualty rates (e.g., 207 out of 400 people survived in Hiroshima's Post Office, burned-out just 200 metres from ground zero)

Glasstone and Dolan's Table 12.21 correlates "severe damage" to 88% killed in the two reinforced concrete buildings right next to ground zero in Hiroshima.

To correlate "moderate damage" to 14% mortality (106 killed out of 775 people), Glasstone and Dolan average NP-3041's Table 12 data for Hiroshima's Telegraph Office at 500 metres (301 occupants, 45 killed) and the Central Telephone Office at 600 metres (474 occupants, 61 killed). Glasstone and Dolan's correlation of "light damage" to 8% killed is NP 3041's Table 12 for Hiroshima City Hall at 1.1 km (216 occupants, 18 died up to 10 November 1945) and the Communications Office at 1.2 km (682 occupants, 56 killed). *These data*

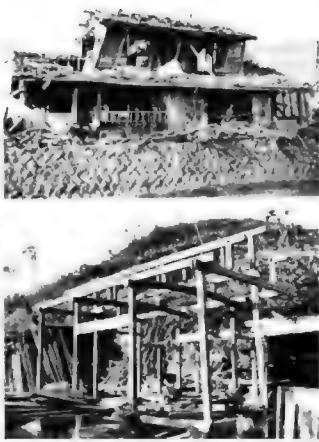
# Hiroshima

THE NUMBER OF ATOMIC BOMBS EQUIVALENT TO GREAT BRITAIN

## Summary

During the last war, a total of 2,264 atomic bombs were dropped on Germany by the Strategic Air Force. To achieve the same accuracy, then to achieve the same destruction of houses, industrial and transport facilities, the use of over 300 atomic bombs for an atomic bomb. Increases in accuracy

Above: the Top Secret 1950 British Home Office report, *Number of Atomic Bombs Equivalent to Germany*, was written by the World War II experts including Frank H. Pavry, who was part of the British Mission to Japan. The 1950 point estimates in the popular media and calculations of weapons dropped on Germany were 1 yield or  $300(20/1000)^{2/3} = 22$  nuclear weapons. The non-linear distribution of targets. The lower the yield causes the popular media to falsely magnify the nuclear weapon would duplicate



Above: Glasstone's *Effects of Nuclear Weapons* points out Japanese buildings were constructed of timbers containing many pre-cut tenons, which weakened their strength. The typical wooden house at the top survived without fire damage 1.0 mile from ground zero, Hiroshima. The lower photo shows the construction method, using timbers with many tenons.



Above: three Japanese beer bottles fused together in the Hiroshima firestorm. Glass did not melt due to the thermal flash. The U. S. Strategic Bombing Survey, Medical Division, *The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki*, March 1947, documents life continuing in the cities, on pages 81-83. "Mitsubishi shipyards in Nagasaki were operating on a very reduced capacity. On 27 October [1945] they launched a 10,000-ton steel cargo ship, laid the keel for another one on 3 November, and had 5 other ships under way. ... Other shipyards were beginning or continuing operations and 6 steel ships were under way. Buildings were not available for other operations and labor was scarce. ... There was a critical shortage of skilled as well as unskilled labor, to a lesser extent owing to the removal of Koreans, Chinese, and prisoners of war. ... In Hiroshima ... Only 26 percent of the total industrial capacity of the



Above: British Mission to Japan report, *Shelter with crude wooden frame.* "There was a large number of such shelters



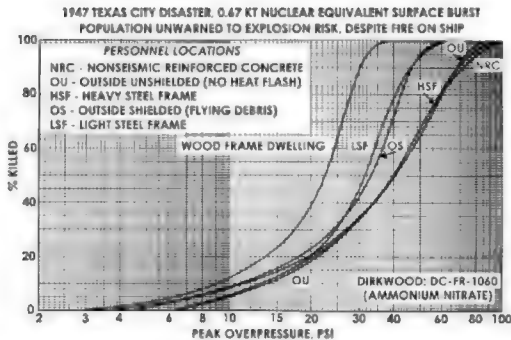
Above: British Mission to Japan report, *Shelter with crude wooden frame.* "There was a large number of such shelters



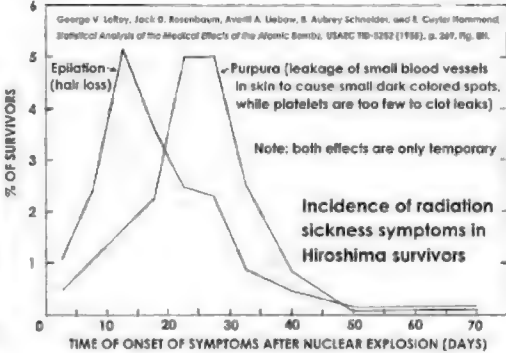
occurred 2-3 hours later at the height of the firestorm, *only apply to an unwarned population inside concrete buildings.* *less than 10% of the total industrial capacity of the city was destroyed ..."* *concrete, brick and masonry to support exposed timber framed shelter," survived*



Hiroshima



Above: casualty risks in the unwarned population from blast effects in typical kinds of American city building were firmly established after the 16 April 1947 Texas City Disaster. Because the thermal effects were trivial, people in the open were safer than those behind objects, due to the flying debris. Acute radiation syndrome affected fewer than 5% of the survivors of Hiroshima.



mal effects were trivial, people in the open were safer than those behind objects, due to the flying debris. Acute radiation syndrome affected fewer than 5% of the survivors of Hiroshima.

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CAPABILITIES  
OF  
ATOMIC WEAPONS (U)



Prepared by  
Armed Forces Special Weapons Project

DEPARTMENTS OF THE ARMY, THE NAVY  
AND THE AIR FORCE  
REVISED EDITION NOVEMBER 1957

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"A few secondary burns resulted from primary flaming of clothing but many people reported such instances in which they were able to beat the fires out without sustaining burns of the underlying

Right: flash burns only occurred in an unobstructed radial line from the fireball, giving window area burns to chairs at 1 mile in Hiroshima, and fence "shadows" on scorched poles at 1.17



FIGURE 5-2

Thermal effects:

Second degree bare skin burn . . .

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1 KT	100 KT	10 MT
(cal/cm <sup>2</sup> )	(cal/cm <sup>2</sup> )	(cal/cm <sup>2</sup> )
4	5.1	9.1

CONFIDENTIAL

Table 6-2. Critical Radiant Exposures for Burns Under Clothing

(Expressed in cal/cm<sup>2</sup> incident on outer surface of cloth)

Clothing	Burn	1 KT	100 KT	10 MT
Summer Uniform . . . . .	1°	8	11	14
(2 layers) . . . . .	2°	20	25	35
Winter Uniform . . . . .	1°	60	80	100
(4 layers) . . . . .	2°	70	90	120

Note. These values are sensitively dependent upon many variables which are not easily defined (see text), and are probably correct within a factor of two.

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Table 6-5. Dose Transmission Factors (Interior Dose/Exterior Dose)

Geometry	Gamma rays		Neutrons
	Initial	Residual	
Foxholes <sup>b</sup> . . . . .	0.05-0.10	0.02-0.10	0.3

<sup>b</sup> No line-of-sight radiation received.

skin." - U. S. Strategic Bombing Survey, Medical Division, The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki, March 1947, page 25.



Hiroshima

Right: very limited burn areas, under the dark patterns of a light, single-layer kimono dress, Hiroshima. Figs. 28 and 29 in Dirikwood Corp. report DC-FR-1054 show that the average unshielded lightly clothed person outdoors in Nagasaki had 2nd to 3rd degree (blistering to charring) burns to 20% of the body area at 1.86 km, killing 10%. At 1.37 km, the stronger flash heated clothing more, and 2nd to 3rd degree flash burns occurred to an average of 38% of body area for personnel unshielded outdoors, killing 50%. The U. S. Strategic Bombing Survey's Medical Division report, The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki (March 1947) explains these facts about burns victims.

Pages 24-27: "The fires particularly in Hiroshima apparently built up more slowly than has been encountered in cities that were subjected to heavy incendiary raids. This gave persons more time to escape from the damaged or demolished buildings. . . . A few secondary burns resulted from primary flaming of clothing but many people reported such instances in which they were able to beat the fires out without sustaining burns of the underlying skin. . . . Generally speaking, the thicker the clothing was the more likely it was to give complete protection against flash burns. . . . There were many instances where skin was burned beneath tightly fitted clothing, but was unburned beneath loosely fitted portions."

Page 43: "The Joint Commission studied a group of 580 workmen in Hiroshima who were marching across the Koi Bridge facing the bomb at a distance of 7,500 feet. All were burned with the exception of three at the rear who were protected by the eaves of a building." The British Mission to Japan report, The Effects of the Atomic Bombs at Hiroshima and Nagasaki, 1946, discusses that group of workmen on page 13, stating that 9 out of the 580 (1.55%) were killed by the serious flash burns at that distance (2.3 km).

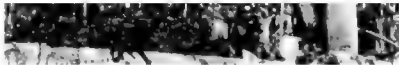


Above: U. S. Strategic Bombing Survey report photos of profile region was cov

mile from ground zero  
in Nagasaki.

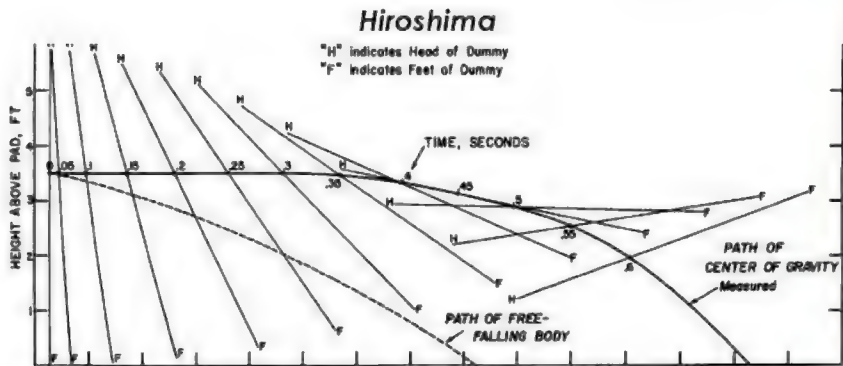


Honest Effects of Nuclear Weapons!



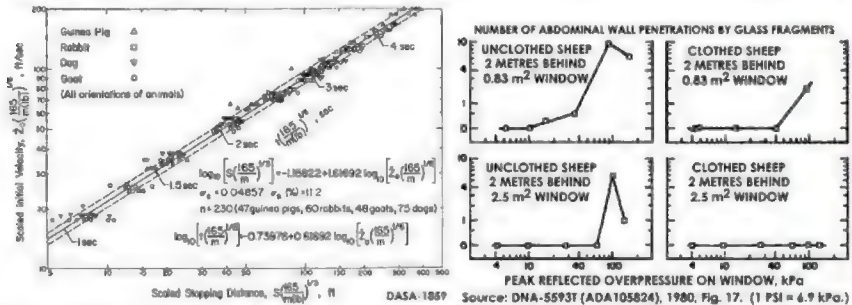
burns to a Hiroshima soldier, illustrating protection afforded  
against thermal flash burns by a cap and shirt at 1.98 km (1.23  
miles) from ground zero. The unburned area below the neck  
en out and rol  
gasoline-soake  
civil defence "





Here in blast displacements the head impacts the ground vertically it does not hit an obstruction at the peak horizontal velocity. The significance of this fact is that the overall effect is like a fall, albeit taking much longer than gravitation takes because of the hydrodynamic aerofol lift (where the

back is sloping into the blast wind for the first 0.5 second, like an aerofol). The extra half second of aerodynamic lift gives sufficient reaction time for people to use their arms to protect their heads from the vertical impact. This explains the high survival rate in the Mach stem region at Hiroshima



Above: the tumbling distances from blast displacement and the protective quality of clothing in preventing most serious injuries from flying glass fragments are established from experiments on animals. At the 400 kt 12 August 1953

Russian nuclear test, 100° (all 6 animals) exposed outdoors on open ground to 8-10 cal/cm<sup>2</sup> survived all the effects, and only 11° (3 of 27) were killed outdoors at 15-36 cal/cm<sup>2</sup> (13 of the 27 had radiation sickness; DTRA TR 07-38.

Relation Between Overpressure and Missile Parameters

Max pressure psi	Type of missile	Velocity ft/sec		Mass, gms		Max missile density No/sq ft
		geometric mean	range	geometric mean	range	
1.9	Window glass	108	50-178	1.45	0.03-10	0.4
3.8	Window glass	168	60-310	0.58	0.01-10	159
5.0	Window glass	170	50-400	0.13	0.002-140	388

Above: Dr Clayton S. White's nuclear test data in his June 1959 testimony to U. S. Congressional hearings on *The Biological and Environmental Effects of Nuclear War*, page 331. Increasing the peak overpressure of the blast wave has a small effect on the mean speed of glass fragments, but causes a larger fall in their mean mass, because the blast breaks the window up into a very fine "powder" at higher overpressures. Smaller fragments have less momentum and less penetrating power at very high overpressures, and can be easily stopped by clothing or even the skin surface. White testified on page 330 "a 10 gram glass fragment, hav-

ing a velocity of 115 ft/sec has only a 1 percent probability of traversing the abdominal wall... clothing will degrade the velocity..." Report DASA-1341 calculates a maximum distance for skin lacerations by 50 ft/sec, 10 gram flying glass fragments (acceleration coefficient 0.72 sq ft/lb) of 7 miles from a 1 Mt surface burst. "At 25 degrees from the edge of a window pane, the density of glass fragments is approximately one-tenth the density of fragments measured directly behind the window." - M. K. Drake, et al. *Collateral Damage*, Science Applications, Inc., Defense Nuclear Agency report DNA 47342 (ADA071371), 1978, page 5-84



**HOW MAN COMES BACK TO HIROSHIMA: New Homes Arise**  
The first atom bomb to be dropped in anger fell on Hiroshima on August 6 last year. The death and destruction in any other single moment of time. But already a new Hiroshima is rising. Colonies of wooden h

## AFTER THE ATOM BOMB: AN ASTON

The atom bomb lives up to all expectations in its immediate destructiveness. The scientists' predictions of the after effects of its explosion, however, have been dismally—or perhaps hopefully—wide of the mark.

WHAT would happen to Hiroshima and Nagasaki on the days when the atom bombs dropped was not a matter for speculation. The diabolical thing had been tried out; the range and completeness of its destructive powers were known. Most people's hatred of the idea of indiscriminate slaughter was assuaged by a hope that in a few seconds of time the new form of warfare would end the war and prevent months of prolonged struggle. Hiroshima and Nagasaki suffered wounds which were mortal to the Japanese Empire. That much was expected,

by the explosions. Their predictions have proved false. They underestimated the resistance of both Man and Nature. The houses rise again in the two bombed cities. The earth, which was expected to become sterile, now blossoms and bears fruit. Does this mean that we had been unduly terrified by the prospects of atomic warfare? Not at all. The killing and the maiming of the population of whole cities will be as extensive as ever the scientists calculated. Some kinds of civilisation may perish if ever the bomb is used again in full-scale war. But

Honest Effects of Nuclear Weapons!

Above: Nagasaki's "blast walls," made of pre-cast concrete (left) and earth-filled wooden planks (right). The idea of a blast wall is to shield flying debris and hurricane-strength blast winds. The blast wall base is wider than the top, to prevent overturning for the blast load design specification. These simple blast walls protected machinery at 0.85 mile from ground zero, Nagasaki. The photographs of simple and effective protection were published in Figure 12.37 of the June 1957 edition of *The Effects of Nuclear Weapons*, but were not included in later editions.



Above: a typical multi-story steel-frame building surviving structurally intact at 0.85 mile from ground zero in Nagasaki. The surrounding wooden buildings collapsed and were burned by fires.

that much achieved. On the long-term effects of the radioactivity released, the scientists had a field day of speculation. With various degrees of certainty they predicted that all life—animal and vegetable—would be impossible for many years on the scorched and acrid desert left

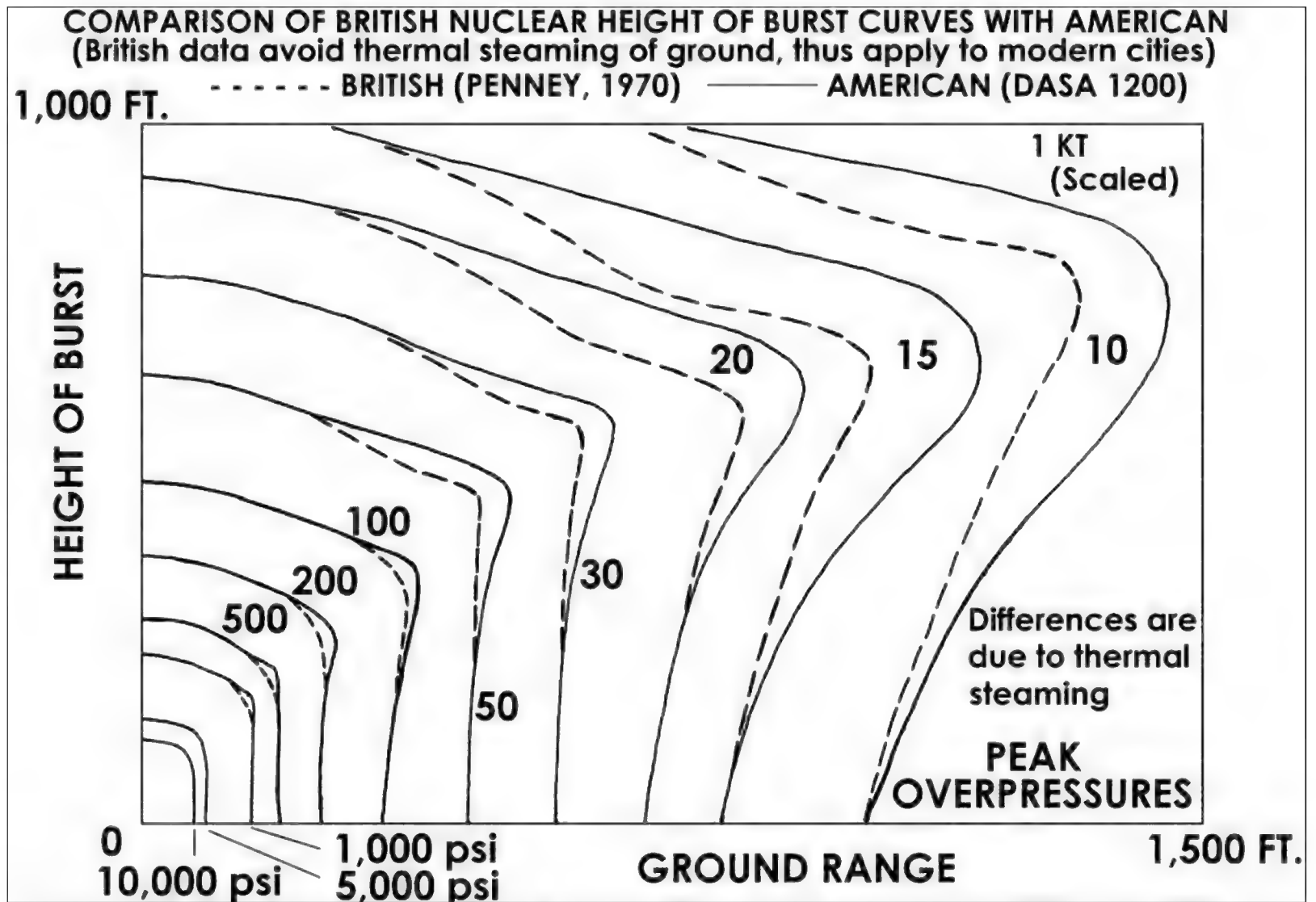
results so far seen show very definitely that the world will survive. Odd men will crawl out of spectacular immunity to build again, as best they know how, and food and flowers will defy all science's efforts at destruction. The atom bomb is not the Last Weapon after all. That may or may not be a source of consolation.



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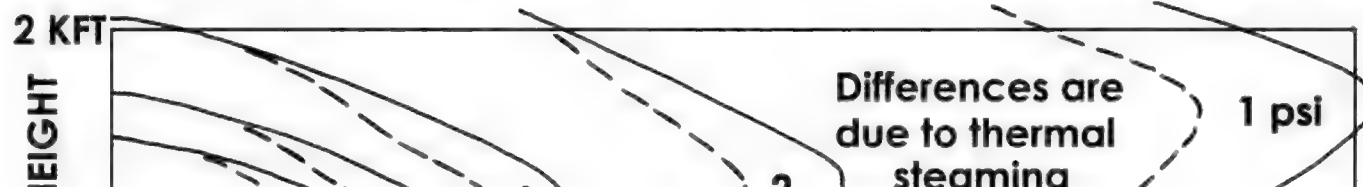






**COMPARISON OF BRITISH NUCLEAR HEIGHT OF BURST CURVES WITH AMERICAN**  
 (British data avoid thermal steaming of ground, thus apply to modern cities)

----- BRITISH (PENNEY, 1970) ——— AMERICAN (DASA 1200)





Lord Penney (1970) explains that the thermal energy deposited on desert surface before the blast arrives adds energy to the near-surface blast (hot air steams upward rapidly by convection; this is for 1-15 kt low yield air bursts that do NOT popcorn the desert sand, so there is NO precursor dust storm, just heated air). Where ground range  $\gg$  burst height, in a modern city the first high rise building absorbs the majority of the thermal flash energy, preventing this effect. (Penney proves that modern buildings in Hiroshima and Nagasaki actually **ABSORBED** blast energy, causing a further attenuation factor, not included above.)

AD-E 430503

## I. INTRODUCTION

The Defense Nuclear Agency (DNA) sponsored the present work at the Ballistic Research Laboratory (BRL) as a part of its collateral damage program. The general objective of the collateral damage program is to ultimately be able to furnish guidance to the field commander when there is a need to fire a tactical nuclear weapon nearby to a friendly town or city. The field commander should be able to complete his mission within the prescribed acceptable level of damage to the friendly area. The pressure-time loading on structures at specified yield-distances is needed to generate the needed probable damage functions for the field commander.

The particular concern addressed by this set of experiments<sup>1</sup> was to determine the amount of shielding, if any, that a row of houses in a town or city complex might afford the next row across the street from it. Accordingly, a 1/8th scale model city complex<sup>2</sup> was designed and exposed to the 1978-79 height-of-burst (HOB) tests at the Defense Research Establishment Suffield, Alberta, Canada (DRES). The model complex was included as one of several experiments carried out during this test series code-named Mighty Mach I and II. The two sets of firings used nominal 490 kg (1000 lb.) pentolite charges to produce the blast waves that were used to load the model complexes. Section II describes the experiments.

13

It is recommended that existing structural codes utilizing blast loading data, such as this report lists, be modified to account for the observed shielding effects. Town or city structures within such a complex as tested would tend to become less susceptible to possible collateral damage when exposed to blast from a tactical nuclear weapon.

## ACKNOWLEDGEMENTS

The author wishes to thank the field staff of The Defence Research Establishment of Suffield, Alberta, Canada for their able support in the accomplishment of this test series. He wishes also to thank Messrs. H. Pearce, B. Pettit (GE-TEMPO), and V. King (BRL-TSD) for their instrumentation-calibration assistance with the test models.

80

**Coulter's 1980 report on city shielding of blast waves (invalidating unobstructed Nevada desert blast data) concluded on page 80 with the recommendation to add a blast shielding correction to existing computer models of blast waves. This went unheeded, as usual!**

AD A090701

⑫ LEVEL III

AD

MEMORANDUM REPORT ARBRL-MR-03036

SHIELDING FROM BLAST EFFECTS -  
1/8TH SCALE MODEL CITY COMPLEX

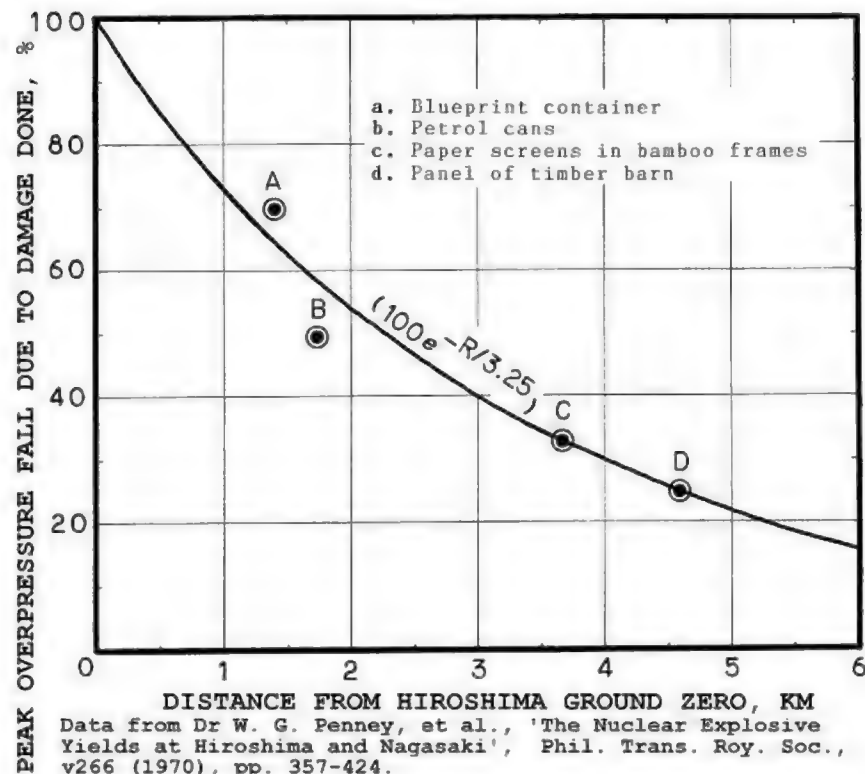
George A. Coulter

July 1980

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US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND  
BALLISTIC RESEARCH LABORATORY  
ABERDEEN PROVING GROUND, MARYLAND



being rigid. This means that they do not merely deflect the shock wave, but they also absorb energy from it at each reflection.

3.21 The removal of energy from the blast in this manner decreases the shock pressure at any given distance from the point of detonation to a value somewhat below that which it would have in the absence of dissipative objects, such as buildings. The presence

<sup>11</sup> This section is based on work by J. von Neumann and F. Reines done at the Los Alamos Scientific Laboratory.

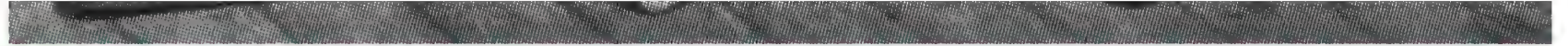
of such dissipation or diffraction makes it necessary to consider somewhat higher values of the pressure than would be required to produce a desired effect if there were only one structure set by itself on a rigid plane.

**Open publication: Glasstone, E.A.W. 1950!**

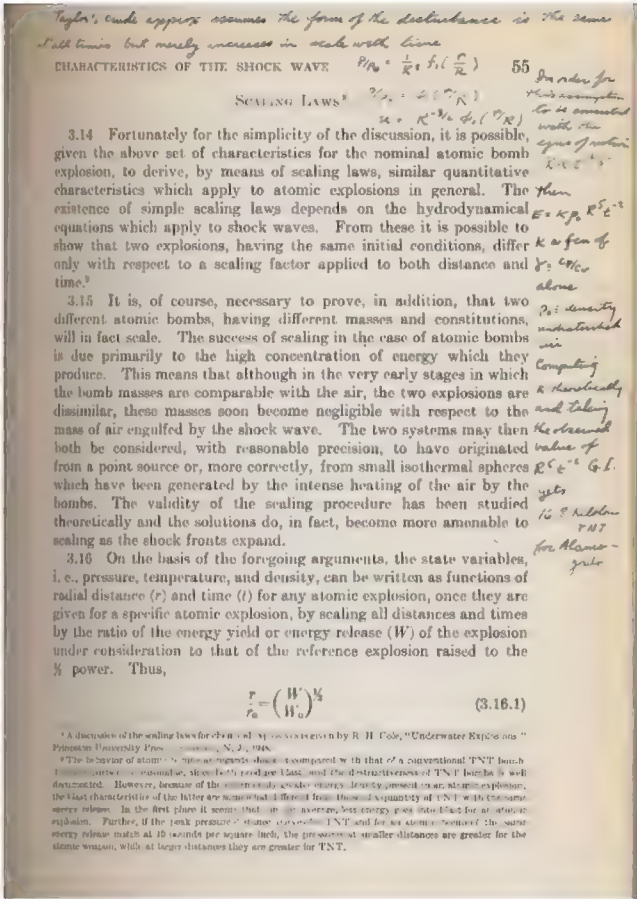
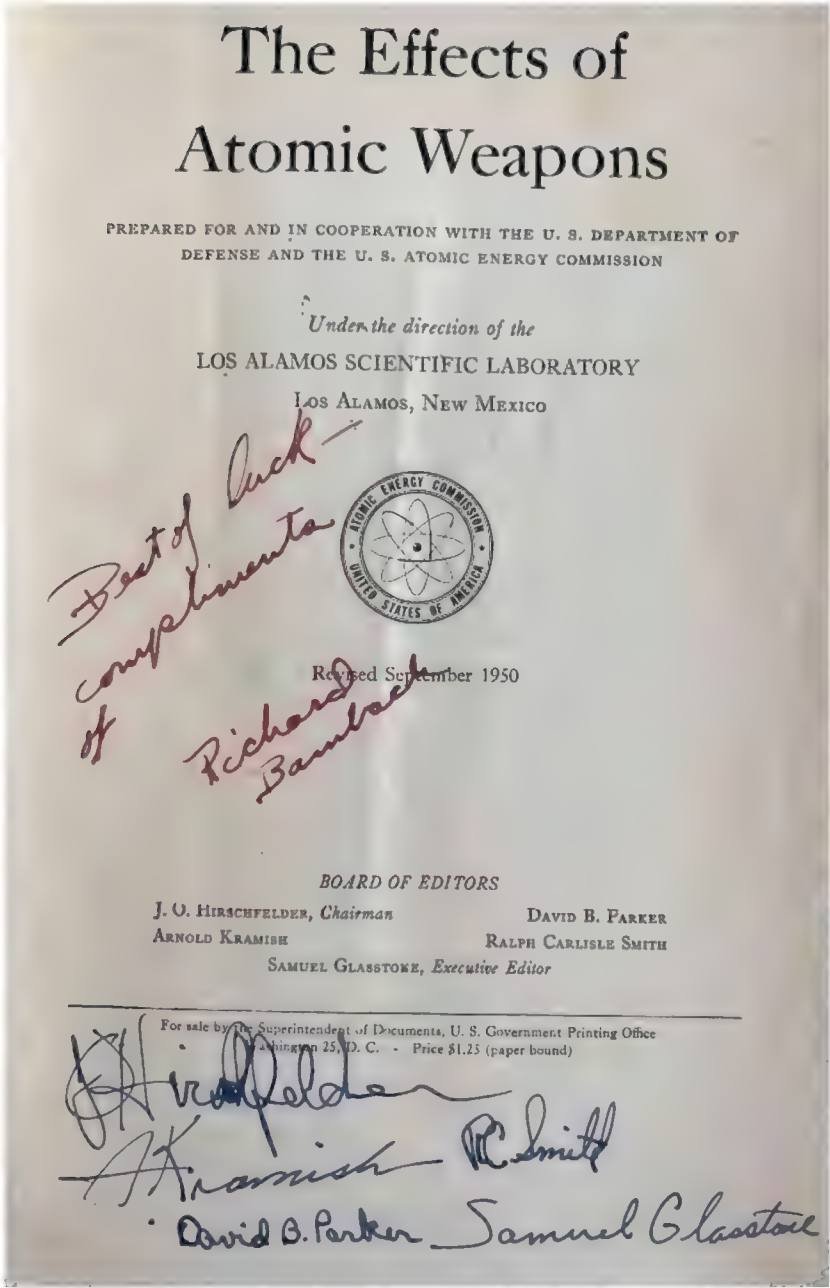








*Dr W. G. Penney of Crossroads Pressure Group Cans and Drums used 5 gallon metal can crushing t*



Autographed title page of the September 1950 revised Effects of Atomic Weapons, signed by all the editors (Hirschfelder, Kramish, Smith, Parker and executive editor Glasstone), LEFT. ABOVE: annotations of Arthur Wightman (famous for the Wightman axioms)

ABOVE: the edition of t revised Effe an unexpect due to a wa when North Korea, lead







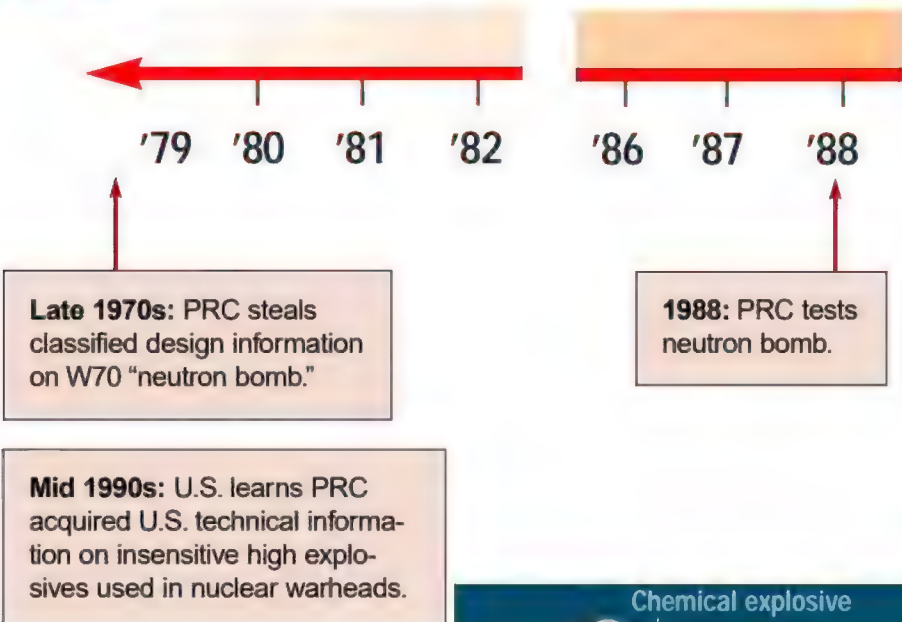
**REPORT OF THE SELECT COMMITTEE ON U.S. NATIONAL SECURITY**

SELECT COMMITTEE OF THE UNITED STATES HOUSE OF REPRESENTATIVES

**105TH CONGRESS, 2d Session, REPORT 105-851, May 25, 1999**

- **The PRC has obtained classified information on the following U.S. thermonuclear warheads, as well as a number of associated reentry vehicles (the hardened shell that protects the thermonuclear warhead during reentry).**

U.S. WARHEAD	U.S. NUCLEAR MISSILE	CURRENTLY DEPLOYED
W-88	Trident D-5 SLBM	Yes
W-87	Peacekeeper ICBM	Yes
W-78	Minuteman III (Mark 12A) ICBM	Yes
W-76	Trident C-4 SLBM	Yes
W-70	Lance SRBM	No
W-62	Minuteman III ICBM	Yes
W-56	Minuteman II ICBM	No



The W-88, a miniaturized, tapered warhead, is the weapon the United States has ever built. In the U.S. arsenal, the W-88 is a submarine-launched ballistic missile carried aboard the Tri-Service ballistic missile submarine. The United States learned about the theft of the W-88 Trident well as about the theft of information regarding several other

**The PRC has stolen U.S. design information and technology for neutron bomb warheads.** The PRC stole classified information on the neutron bomb from a U.S. national weapons laboratory. The PRC stole this classified information on the neutron bomb

In the late 1970s, the PRC stole design information from the Lawrence Livermore Laboratory. The U.S. government learned of the theft several months after it took place. The W-70 warhead may be used either as a strategic thermonuclear weapon or as a "neutron bomb". The PRC tested the neutron bomb

**The stolen U.S. nuclear secrets give the PRC design information on a par with our own.** Current U.S. nuclear weapons targeted on U.S. cities are based on 1950s-era nuclear technology. The PRC has leaped, in a hand-to-hand transfer of strategic nuclear capabilities to the more modern thermonuclear weapons

**The "Walk-In"**

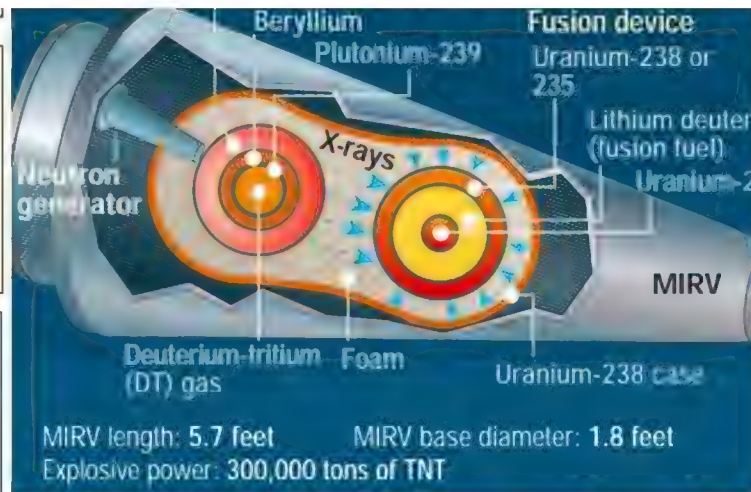
In 1995, a "walk-in" approached the Central Intelligence Agency and provided an official PRC document classified "Secret" containing information on the W-88 Trident D-5 warhead, the most advanced U.S. warhead, as well as technical information concerning other thermonuclear weapons.

The CIA later determined that the "walk-in" was a Chinese spy. Nonetheless, the CIA and other intelligence services reviewed the document and concluded that it contained U.S. design information.

The "walk-in" document recognized that the U.S. nuclear weapons were the state-of-the-art against which PRC thermonuclear weapons were measured.

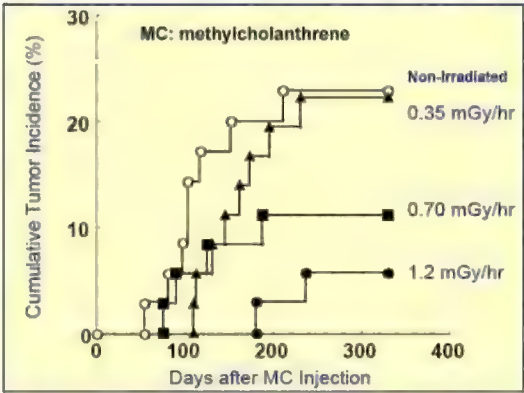
**1995:** "Walk-in" document confirms the theft of information on the U.S. W-88 sometime between 1984 and 1992, and on the W-62, W-76, W-78, and W-87 sometime prior to 1995.

**1997:** U.S. learns that in 1985 the PRC stole, through Peter Lee, classified information on miniaturized nuclear tests.



- The stolen information includes classified U.S. thermonuclear warheads, including thermonuclear warhead in the U.S.
- The stolen information also includes information for an enhanced radiation weapon ("neutron bomb"), which neither the nation, has yet deployed.
- The PRC has obtained classified information on U.S. thermonuclear warheads, as well as reentry vehicles (the hardened shell clear warhead during reentry).

Low Rate Gamma Irradiation Suppressed MC-Induced Skin Tumors in Mice



K. Sakai, International Hormesis Conference 2005

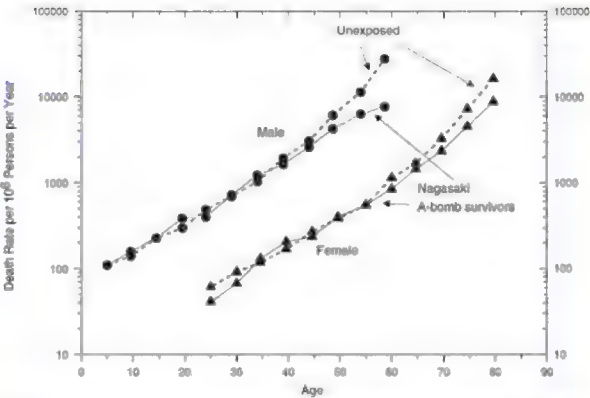
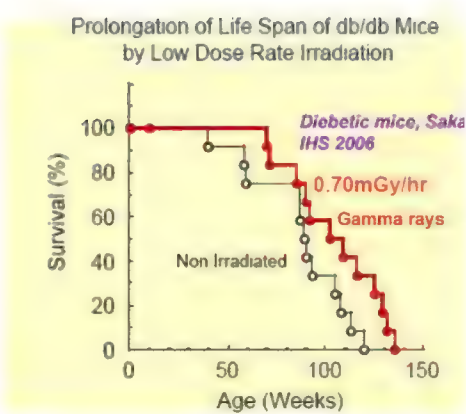
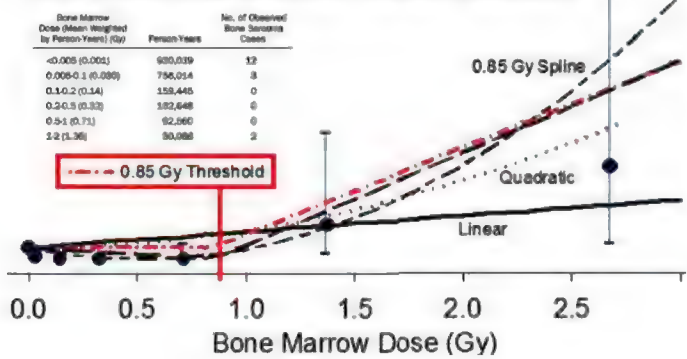


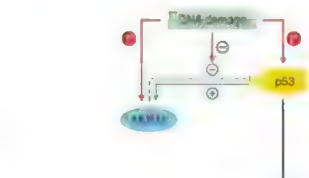
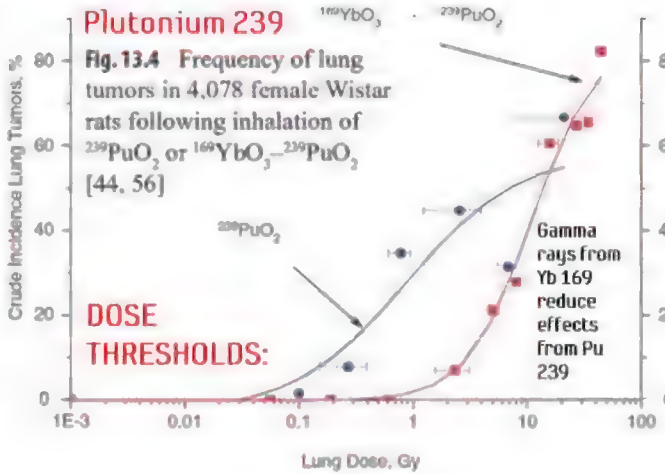
Fig. 13.1 Mortality in male and female Japanese A-bomb survivors and comparable unexposed controls  
SOURCE: Charles L. Sanders, Radiation Hormesis and the Linear-No Threshold Assumption, Springer, 2010.



D. Samartzis, et al., J. Bone Joint Surg. Am., v93, 2011, pp1008-15.  
(Note this RERF paper funded by US Government FAILS to mention or discuss the dose rate dependence of DNA repair in comparing Hiroshima to radium dial painters)



Bone Marrow Dose (Mean Weighted by Person-Years) (Gy)	Person-Years	No. of Observed Bone Sarcoma Cases
<0.005 (0.002)	600,039	12
0.006-0.1 (0.005)	794,014	8
0.1-0.2 (0.14)	158,445	0
0.2-0.5 (0.32)	152,648	0
0.5-1 (0.71)	92,560	0
1.2 (1.36)	90,088	2



Two nearly identical lifespan studies of 70-day-old female Wistar rats exposed to <sup>239</sup>PuO<sub>2</sub> particles. The first study [56] was with 3,142 rats exposed to <sup>169</sup>Yb between the two studies was that rats in γ-ray doses from <sup>169</sup>Yb (Fig 13.4).

44. Sanders CL, Laubala KE, McDonald J aerosol. III. Survival and lung tumors.

56. Sanders CL, Dagle GE, Cannon WC <sup>239</sup>PuO<sub>2</sub> in rats. Radiat Res 68:340-360

Source: Dr Charles L. Sanders, Radiation Hormesis



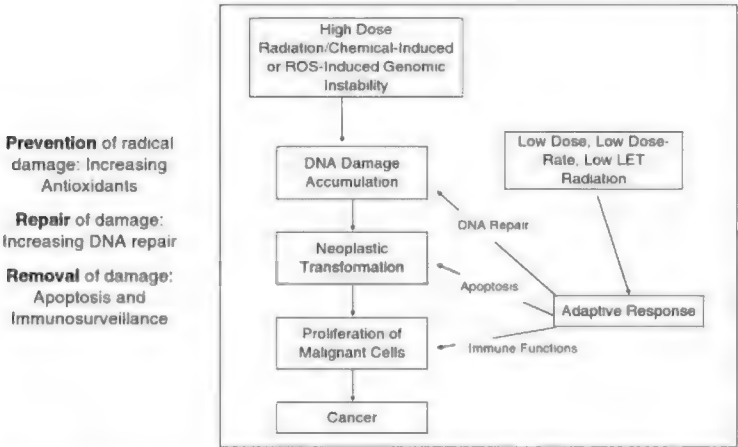


Fig.2.2 Mechanisms of prevention, repair, and removal of ROS and radiation damage

“Ignorance and misinformation can handicap the progress of a city or a company, but they can, if allowed to prevail in foreign policy, handicap this country’s security. In a world of complex and continuing problems, in a world full of frustrations and irritations, America’s leadership must be guided by the lights of learning and reason - or else those who confuse rhetoric with reality and the plausible with the possible will gain the popular ascendancy with their seemingly swift and simple solutions to every world problem.”

- President John F. Kennedy’s ungiven speech to the Dallas Trade Mart on 22 November 1963.

Fig.2.3 Temporal stimulation of antioxidants, DNA repair, apoptosis, and the immune system following exposure to ionizing radiation [49]

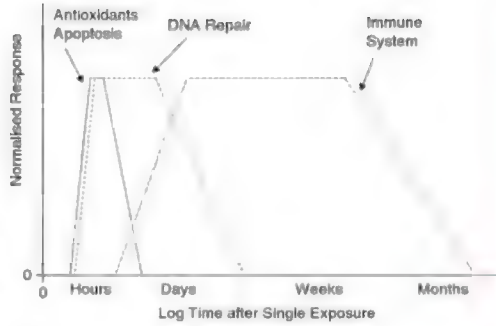


Fig.2.6 Dicentric chromosome aberration yield as a function of radiation dose [82]

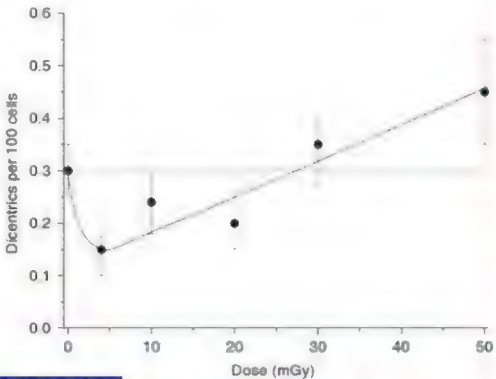
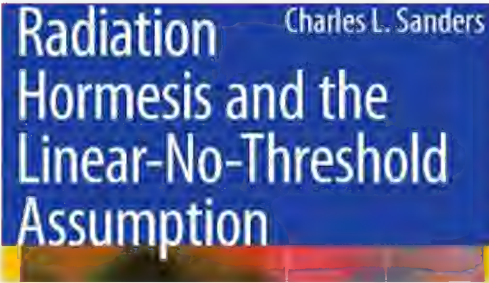


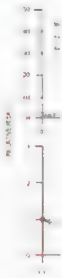
FIGURE 3. Excess relative mortality corrected for 20% bias in baseline are 95% CI. The obvious red point

SOURCE: Doss THRESHOLD M HORMESIS," C Journal: Vol. 1

Figure 10. Relative risk for leukemia as a function of the dose < 4 Sv. Upper panel: all data; lower panel: low



When the “Linear No-Threshold” assumption of radiation was formulated by Lewis in 1957 (in opposition to bomb fallout!), it was TOTALLY UNKNOWN that radiation unbinds DNA repair enzyme P53 from its MDM2 inhibitor!



## WASHINGTON SCENE...from the AIAA Washington

ASTRONAUTICS & AERONAUTICS  
January 1981

● CIA Deputy Director John McMahon, in testimony before a House Intelligence Subcommittee, estimated that the Soviet Union had spent \$200 million on propaganda and covert campaigns against NATO deployment of enhanced-radiation (neutron-bomb) weapons and the modernization of theater nuclear weapons.

Enhanced radiation weapons (ERW) increase radiation while greatly reducing blast (tenfold) and heat damage to surrounding areas. Made for use in short-range, tactical nuclear weapons such as the Lance missile and 8-in. howitzer, they would probably be used against large concentrations of Warsaw Pact tanks, a major threat to NATO.

The campaign against the neutron bomb began in the summer of 1977 and was manifested in a series of coordinated diplomatic moves, overt propaganda, and covert political action, said McMahon. It began in the Soviet and East European press and spread to communist international front groups all over the world. "The purpose of this front-group activity was to maintain the campaign's momentum and to draw noncommunists into the campaign, particularly in Western Europe. What had begun as a Soviet effort now appeared to many as a general public reaction to the alleged horrors of the neutron bomb," said McMahon.

By far the most important comments, said McMahon, appeared in the noncommunist press in the political center

While it is difficult to assess the full impact of the anti-neutron-bomb campaign, the Carter Administration in April of 1978 deferred production of the enhanced-radiation element of the warheads indefinitely while proceeding with modifications to the warheads themselves to make them compatible with ER components. In commenting on the results of the Soviet bloc campaign, the CIA testimony quoted the chief of the International Department of the Hungarian Communist Party, Janos Berecz, as saying, "The political campaign against the neutron bomb was one of the most significant and most successful since World War II." McMahon also noted that "the Soviet Ambassador to the Hague (Netherlands) at that time was subsequently decorated by the CPSU (Communist Party of the Soviet Union) in recognition of the success of the Dutch Communist Party under his direction, in organizing the high point of the anti-neutron bomb campaign."

With the neutron bomb temporarily defused, testified McMahon, the Soviet Bloc turned its efforts against the U.S. initiated move to modernize the theater nuclear forces (TNF) by deploying the highly accurate ground-launched cruise missile (GLCM) and the Pershing II missile. Scheduled for deployment in late 1983, they will, for the first time, place targets on Soviet soil within range of NATO ground-based missiles. The purpose of the modernization is to minimize the



Approved For Release 2004/09/24 : CIA-RDP81M00980R003200010060-0

CIA declassified: CIA-  
RDP81M00980R003200010060-0

2 September 1977

## SOVIET PROPAGANDA: THE NEUTRON BOMB

**SUMMARY:** The Soviet Union during July and August 1977 mounted a worldwide campaign against U.S. production of the neutron bomb. The Soviets pursued this issue in every media channel and wherever it was possible to stimulate adverse public discussion. These efforts were directed toward pressuring the U.S. to back away from producing the bomb as well as accumulating political capital for Soviet use at future SALT and CSCE talks. As the campaign peaked at the end of August, it was apparent

denouncing the neutron bomb. During the week of 1-7 August, significant attention was directed toward support of the "Week of Action" organized for 6-13 August by the World Peace Council front group. To keep up steam, Pravda on 9 August published an appeal by 28 communist parties against production of the neutron bomb. The American Embassy in Moscow noted that the neutron bomb was the prime Soviet propaganda target.

7. Echoes in Eastern Europe. State Department telegrams from East European Posts agree that the neutron bomb campaign there, which took off in the latter weeks of July, was massive, well-organized and faithfully mirrored the Soviet effort. The campaign employed all channels of public communication: press, radio, television, petitions, public letter writing and demonstrations. Some comments:

10. For the Soviets, the real propaganda paydirt lay in editorial treatment given the neutron bomb by this second group, a performance judged by NATO Secretary General Luns in a 26 August speech as consisting of half-truths, untruths and ignorance. Given the emotional themes which were raised in the neutron bomb debate--saving buildings rather than people; the hypocrisy of Americans advocating human rights in face of the bomb production; the endangering of detente--it was an old-fashion editorial binge which many papers would not deny themselves. And beyond the non-communist, anti-bomb press,

SECRET

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The KGB's  
Magical War for "Peace"

BY JOHN BARRON

It has spread like a raging fever throughout the world. From Bonn to Istanbul, Lima to New York, millions upon millions of people have joined in the nuclear-freeze movement. It is a movement largely made up of patriotic, sensible people who earnestly believe that they are doing what they must to prevent nuclear war. But it is also a movement that has been penetrated, manipulated and distorted to an amazing degree by people who have but one aim--to promote communist tyranny by weakening the United States. Here, in an exclusive report, Reader's Digest Senior Editor John Barron, author of the best-seller "KGB: The Secret Work of Soviet Secret Agents," authenticates in detail how the Kremlin, through secrecy, forgery, terrorism and fear, has played upon mankind's longing for peace to further its own strategic

## Fabrications and Fronts

IN THE SOVIET LEXICON, Active Measures include both overt and covert propaganda, manipulation of international front organizations, forgeries, fabrications and deceptions, acts of sabotage or terrorism committed for psychological effect, and the use of Agents of Influence.\*

The KGB has concocted more than 150 forgeries of official U.S. documents and correspondence portraying American leaders as treacherous and the United States as an unreliable, warmongering na-

tion. One of the most damaging was a fabrication titled *U.S. Army Field Manual FM30-31B* and classified, by the KGB, top secret. Field manuals *FM30-31* and *FM30-31A* did exist; *FM30-31B* was entirely a Soviet creation. Over the forged signature of Gen. William Westmoreland, the manual detailed procedures to be followed by U.S. military personnel in friendly foreign countries. These fictitious in-

## Façade of Peace

THE WORLD PEACE COUNCIL emerged in Paris in 1950 to foment "Ban the Bomb" propaganda at a time when the Soviets had not succeeded in arming themselves with nuclear weapons. Expelled from France for subversion in 1951, the WPC took refuge in Prague until 1954, when it moved to Vienna. The Austrians also evicted the



Romesh Chandra

vain and arrogant. Chandra, almost embarrassing in his adherence to Soviet dictates, paeans to all things Soviet. The Peace Council in its turn preaches the peace movement," Chandra said a few years ago. "The Peace Council in its turn preaches to all Soviet initiated international affairs." Nevertheless, the Russian pervise Chandra closely by ing both International Dep: and KGB representatives to a permanent secretariat of the Helsinki. The public record demonstrates the totality of control. In its 32 years of ex: Kremlin's line of the mon did not raise its voice against suppression of Polish and E:

man workers in 1953, slaughter of Hungarians i Soviet abrogation of the r test moratorium in 1961, th: destine emplacement of missiles in Cuba in 1962, th: sion of Czechoslovakia in the projection of Soviet r power in Angola, Ethiop: Yemen. The WPC has fa criticize a single Soviet arm program; only those of the And it endorsed the Sovie sion of Afghanistan.

WPC finances further ref: via central U.S.

READERS' DIGEST, 1983 BOOK  
EXTRACTS BY JOHN BARRON

Russia-Ukraine war: Why is Russia sending nuclear arms to...



Gravitas | Russia-Ukraine War: Nuclear weapons reach Bela...





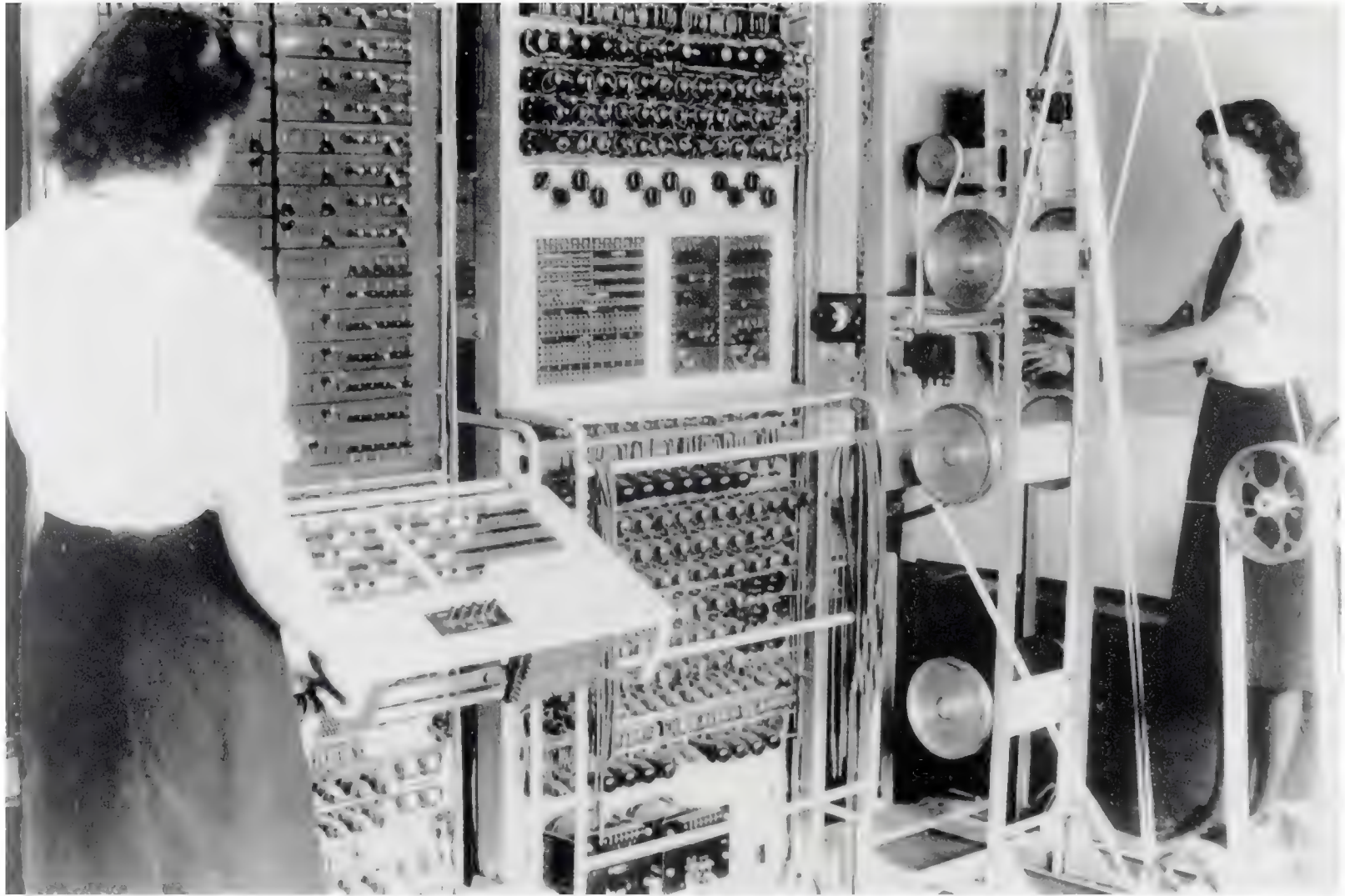
Gravitas: Lukashenko offers nukes to anyone who supports...



Big nose on why progress and real understanding requires ...



Above (12 June 2023 update): please see <https://twitter.com/Nukegate/> for recent escalation news. Bignose (yours truly) has added some videos on the need for activism to get the word out urgently over the crisis. Note that the present hybrid war situation has some elements in common with situations in early 1939 (when Germany had partially but not completely invaded its neighbour Czechoslovakia) and the situation in mid 1914, when the UK government was also deluding itself by focussing on trivial domestic affairs, *rather than on the so-called squabbles in faraway lands between people of whom we couldn't care less*. Particularly, it wasn't really Churchill's brain that smashed the Nazis, but rather the **10,000 staff at Bletchley Park's Enigma codebreakers and later in the war colossus, the first programmable computer, used to find cypher keys to the more difficult Fish code (the higher level Nazi code than the better known Enigma code); until the enemy codes were deciphered, upto El-Alamein in 1942, Britain lost every battle (and just managed to fend off enemy invasion with the Dunkirk Evacuation and the Battle of Britain 1940) but afterwards - forewarned and forearmed by the secret decoding of classified Nazi radio telex signals - the West won victory after victory, a fact suppressed from history due to official secrecy until 1974 (because Enigma machines were sold to governments around the world after WWII and we continued to keep secret the fact we could decode them due to the need to fight the Cold War), so all histories until 1974 are corrupt, and this factor is still being falsely used to give both Monty and Churchill an exaggerated aura of genius which is more honestly ascribed to a programmable 5-ton, 100-logic gate vacuum tubes machine, plus American lend-lease and then entry into WWII after Pearl Harbor. There are horrifying lessons here than we need to face up to squarely, *not through the rose-tinted specs***



*of historically corrupt nostalgia! We are again in potential pre-war era, and time to prepare to survive and prevail may again be running out.*

Western tactical neutron bombs were disarmed after Russian propaganda lie. Russia now has over 2000 - *Russian propaganda and coercion of the Western nuclear disarmers and its Marx media leads to mass murder with nuclear weapons becoming a repeat of the 1920s-1930s BBC "news" gas war liars led by Professor Philip Noel-Baker* (who repeated the same genocidal disarmament "trick" against the neutron bomb in the cold war, as we will show later in this post, below) to shut down credible deterrence and suck up to lying mass-murdering dictators promising heaven on earth. By the way, the military casualty toll for the Ukraine war is only a small fraction of

*the total murdered due to the **Western ideologues decision to ensure Ukraine's failure to quickly win the war by only escalating incrementally to suck Putin into WW3, precisely Chamberlain's half-witted approach under pressure from similar liars in the 30s (a deliberate Tom Schelling "play war as a chess game, and don't escalate to win - reverse the long established rules of war and win a Nobel prize in economics for bankrupting humanity), the now "mainstream" fake ideology approach as used by lefty militarists like Ike, Johnson and Biden to lose in Korea, Vietnam, Afghanistan respectively), due to collateral damage in the form of long-term inflated living costs of heating energy and food in Europe as we predicted in 2014, mass murdering the elderly; something the Yank media like John doesn't seem to give a damn for*** (this is a 100%-updated re-blog of **our 22/02/22 post**). Please note that the link to the analysis of the secret USSBS report 92, The Effects of the Atomic Bomb on Hiroshima, Japan (which google fails to appreciate is a report with the OPPOSITE conclusions to the lying unclassified reports and Glasstone's book on fire, is **HERE**, being part of the internet archive page **HERE**. If you don't like the plain layout of this blog, you can change it into a "fashionable" one with smaller photos you can't read by adding ?m=1 to the end of the URL, e.g. <https://glasstone.blogspot.com/2022/02/analogy-of-1938-munich-crisis-and.html?m=1>. See also: **War Plan UK**.



DAILY PRESS, Newport News, Va., Sun., July 1, 1962

3D

# Provocative Book About Nuclear

**THINKING ABOUT THE UNTHINKABLE**, by Herman Kahn. New York: Horizon Press. 254 pages, \$4.50.

Reviewed by Bill Amanna

x x x

Herman Kahn is a physicist who gained national prominence through his book "On Thermo-nuclear War," in which he described with dispassionate thoroughness what the U. S. could expect in the event of nuclear war. The book unleashed a heated debate over civil defense which is continued in Mr. Kahn's present volume.

The author's chief premise is that although "thermonuclear war may seem unthinkable, immoral, hideous or highly unlikely, it is not impossible. To act intelligently we must learn as much as we can about the risks."

How likely is accidental war? How can it be made less likely? What would conditions be if a nuclear attack leveled 50 American cities? How many American lives and European and Russian lives, would an American President risk by standing firm in differing types of crises? By starting a nuclear war?

Mr. Kahn doesn't stop there. He goes on to put his questions in even more concrete and hence more upsetting terms. He considers, for example, the defense of Europe. We have increased our non-nuclear forces to meet a possible Soviet conventional attack in Europe. The author notes our policy would be to initiate the use of nuclear weapons should conventional forces prove inadequate. So, whether we intend it or not, we may have obligated ourselves to

Some of Mr. Kahn's interesting chapters so-called "war games. By this hypothetical situation suggested. All steps on a position ladder" are proposed, for example, so many missiles has so many possible 'A' attacks. attacks. With so much accuracy. So many So many persons a complex of situations are the alternative

The author's point should think of it many individual within the context of national strategy. is with getting it discussed in the end

Mr. Kahn's contribution to the debate seems

There are questions to be answered, Mr. Kahn insists, and he lists a few:

## ***The Nation's Best Sellers***

Best sellers of the week as  
compiled by Publishers' Weekly:  
The Book Industry Journal.

### **FICTION**

#### **1. SHIP OF FOOLS**

By Katherine Anne Porter

go to all-out war.

### **MUST MAINTAIN PRETENSE**

The President, Mr. Kahn holds, may conclude that even if he is not willing to initiate a war or limited reprisal that could easily develop into war, he must maintain a pretense of being willing. Perhaps the facade will work. After all, even if he is not willing, the Soviets cannot rely on this. And, withal, we may in fact do nothing ourselves; it may be forced on us or occur inadvertently.

tain to renew the resulting from the time. Moreover, added significance considers his position as assistant to the Director, the Office of Defense Mobilization, Atomic Energy.

This is a highly important book. Although he realizes that there are not plenty of books about, Mr. Kahn has written an important service vacative book.





Lying journalism:

# A look into the face of barbarism

By Christopher Hitchens

It's been well said that all politicians are liars. But the general truth of the statement can sometime obscure the truly gigantic, sensational falsehood.

On February 12 this year Mr. William Whitelaw told one of the biggest lies in modern history to the British House of Commons. He said:

"Most houses offer reasonable protection against radioactive fall-out from nuclear explosions. Protection can be substantially improved by a series of quite simple do-it-yourself measures."

Since that date, Mr. Whitelaw's Home Office has reluctantly agreed to publish and sell a booklet called *Protect and Survive*. The reluctance is understandable. In attempting to "flesh out" the Home Secretary's deceitful claim, it reveals it to be even more threadbare and pitiful than it was at first glance.

The pamphlet attempts to reconcile several contradictory elements. The first is the widespread knowledge that there is no defence against nuclear weapons. The second is the government's decision not to provide shelters or organize evacuation in the case of war. The third is the extent to which "Civil Defence" preparation is part of war preparation, and thus a contributor to escalation. None of these obvious assumptions is explicitly stated in *Protect and Survive*, but all can be found in it.

The first point is a very old one. As long ago as 1957 Duncan Sandys's "defence" White Paper admitted that there was no defence against a nuclear strike on the United Kingdom. The yield and accuracy of nuclear warheads has increased many, many times since then. More recently Lord Carver, former Chief of Staff, told the House of Lords (on March 6, 1980) that:

"There was no defence against a ballistic missile nuclear attack and it was a waste of time and money to erect one."

Mr. Whitelaw knows this too.



'Civil defence is useless against nuclear attack;  
it only helps bamboozle the defenceless public'

Yet Air Marshall Sir Leslie Mavor, who is Principal of the Home Defence College, told a civil defence seminar in 1977 that although "the main target areas would be so badly knocked about as to be beyond effective self-help" those parts of the country "holding no nuclear targets" might come through "more or less undamaged by blast or fire". He opined:

"Their difficulties would be caused by fall-out radiation, a large influx of refugees, survival without external supplies of food, energy, raw materials . . ."

Difficulties indeed. *Protect and Survive* does not even mention them. Its whole intention is not to ensure survival after the event, but to allay public concern before the fact. As you can see, its authors can hardly have believed their own feeble propaganda.

Its authors, in any case, will not have to put their homespun schemes into practice. They will be encased in deep shelters with other selected bureaucrats, military men and "planners". If one single thing exposes the hollowness of the civil defence mandarins, it is the cynical way in which they propose to ignore their own advice.

Not for them the up-ended kitchen table, the brimming makeshift lavatory, the white-washed windows and the improvised sandbag. They propose, and tried to conceal the fact that they propose, to sit it out in air-conditioned bunkers out of town, under the Chiltern Hills. Thus, by a perfect apotheosis of our social relations, the Establishment will actually outlive the people.

Still, *Protect and Survive* is a booklet to keep handy. It advises you, if caught in the open by a nuclear explosion, to lie down and pull a coat over your face. It advises you, if caught in your place of work, that "if you can reach home in a couple of minutes try to do so." If not, "take cover where you are or in any nearby building." It advises



That is perhaps why *Protect and Survive* starts off with such weasel words. It says, in faintly menacing bureaucratic prose:

"**Stay at Home.** If you move away — unless you have a place of your own to go to or intend to live with relatives — the authority in your new area will not help you with accommodations or food or other essentials. If you leave, your local authority may need to take your empty house for others to use. So stay at home."

Clear? Having made sure you are stuck at home, the pamphlet tells you to hide under a table in the room furthest from the roof and the outside walls. It has the grace to admit that you are wasting your time if you live in a multi-storey block or a bungalow, but it doesn't suggest any course of action. It does, however, advise this:

"If you live in a mobile home or other similar accommodation which provides very little protection against fall-out your local authority will be able to advise you on what to do."

You bet they will.

The pamphlet suggests reinforcement of the "fall-out room" with sacks of earth, trunks of books etc. It also recommends the laying-in of enough food (and water) to last fourteen days (water to be drunk from the lavatory in one fetching illustration). Other sensible measures such as the painting of windows are advised.

The unspoken assumption of *Protect and Survive*, and of the whole Civil Defence program in Britain, is that we would have *three weeks'* warning of a nuclear attack. This, of course, is just what modern nuclear warfare, with its doctrine of "counter-force", is designed to do without. The attack must be a surprise.

But no matter. Major Idwal Roberts, War Emergency Officer for Hertfordshire County Council, recently told his local paper that his team would need "three to four weeks' notice".

If the Soviet Union did not oblige Major Roberts in this way, the position would be as follows.

Fylingdales early warning station would transmit a pre-arranged warning to every police station in the country, who would in their turn sound the sirens. The official paper on this says that no more than two and a half minutes should elapse between the first warning and the sirens. But there are only 3.6 minutes to play with. And what if the attack occurred at night? Whatever happened, the last few minutes of civilization in these islands would obviously be something of a scramble.

There is another direct lie at the heart of official propaganda here. For the purpose of getting people to stay put, *Protect and Survive* threatens them with the consequences of leaving home. A film already made for the Central Office of Information, to be transmitted if time permits, says:

"No place in the U.K. is safer than anywhere else. No one can tell you where the safest place will be. In fact you will be far better off at home, because it is where you are known."

you that "you cannot remove radiation from water by boiling it." It advises you to "remember that you may hear a fall-out warning without hearing an explosion." It advises you, in perhaps its finest sentence, that:

"If there is structural damage from the attack you may have some time before a fall-out to do minor jobs to keep out the weather — using curtains or sheets to cover broken windows or holes."

Civil defence is useless for a nuclear weapons power. It only helps to coerce and bamboozle a population into accepting, step by step, a level of risk which it would never accept at one go. The Home Office planners envisage 13,000 Hiroshimas, or 200 megatons, as the likely order of devastation we would undergo. We are looking straight into the face of barbarism. It is that face which *Protect and Survive* wishes to obscure. Is it too late for the people to prepare to outlive the Establishment?

*New Statesman*, London



# THE EVENING STAR

Washington, D. C., Friday, June 26, 1959

A-7  
★★

great majority of the population would be outside the devastated areas, he said.

"We can save them easily," Dr. Libby said.

His program for saving most Americans was described this way:

"First, tell the people what they may be up against.

"Second, tell them what actions are to be taken before, during and after an attack.

"Third, support their efforts with new information, new tools and devices and new techniques."

Even a massive attack would not destroy the American economy. Herman Kahn, of the Rand Corp., told the subcommittee. Mr. Kahn said a recent study by the research corporation led to the conclusion that nuclear war would not be suicidal.

the war but would be able to restore some semblance of pre-war society quite rapidly," he said.

"Inexpensive measures designed to insure national survival in an all-out war of the early 60s might be fairly cheap and relatively reliable — something of the order of a billion dollars or a fraction thereof should be sufficient," he said.

The assurance that America would survive a war would add to the value of our policy of war deterrents. The Soviet Union, Mr. Kahn said, would be more reluctant to "black-mail" or attack the West if they knew that Western threats of retaliation were not based on a suicidal plan.

Subcommittee members emphasized the necessity for a

"The majority of our popu- | start on a national shelter  
ation would not only survive | program. |



THE EVENING SUN, BALTIMORE

A 24

WEDNESDAY, JUNE 27, 1962

## Books In Review

### A Prod To More Rational Thinking About Thermonuclear Policy

THINKING ABOUT THE UNTHINKABLE. By Herman Kahn,  
Horizon Press. \$4.50.

THINKING about the unthinkable or even the hard to think about (in the author's terms) is not nearly as difficult as it sounds, in the case of Herman Kahn's newest exploration of national obligations with regard to thermonuclear war. His new book starts out in defiance of the criticisms of his previous impressive work, "On Thermonuclear War." He denies the theory that "it is immoral to think, and even more immoral to write in detail about having to fight a thermonuclear war," and deplores that "we Americans and many people throughout the world are not prepared to face reality."

For while such a war may be regarded as "unthinkable, immoral, insane, hideous, or highly unlikely it is not impossible; to act intelligently we must learn as much as we can about the risks; we may thereby be able better to avoid nuclear war." The alternatives he finds include defeatism, inadequate preparations, and pressures toward either preventive war or undue accommodation. Mr. Kahn (who has left both Rand and Princeton and now heads the Hudson Research Institute) cheerfully takes on the opposition of Bertrand Russell and C. P. Snow, one of whose best known observations on nuclear war Mr. Kahn finds "neither accurate nor responsible."

Here is an extraordinarily readable discussion of where we are today—not in weapons and defenses, but in the making of policy. There is a survey of how

one thinks solely of providing milk for the baby but plans nothing for the rest of the family.

Americans, he finds, are reluctant to plan systematically against war, primarily because they do not regard force as reasonable. This is "a somewhat naive view; force has been around for many years; it has been used by good, bad, and indifferent people, rationally as well as irrationally." But even very thoughtful planning can go awry because advance estimates can be far from accurate. When the Korean war opened, for example, who would have dared predict that United States pilots would shoot down sixteen Korean pilots to every American lost? Yet it did happen that way, and it had its effect on the whole war.

Mr. Kahn contributes some substantial ideas on civil defense, based on his suspicion that destruction of an enemy population is far from a likely first aim; hence that there is a larger chance of city survival than has sometimes been thought, and hence justification for increased effort to save as many civilian lives as possible. This is not comparable to the real first priority objective, which is the full deterrence of war, but it is not negligible. The author sharply discounts some of the gloomiest predictions of total destruction and, while recognizing the tragedy of any civilian loss at all, insists that reduction of the loss is not only possible but wholly desirable.

Against that large and well-known

wars can start—inadvertently, or by miscalculation, or by plain calculation, or by catalysis (through a third nation leading Nations A and B into conflict, much as a Serbian-Austrian dispute in 1914 finally plunged Russia, Germany, France and Britain into World War II).

There is a portrayal, thereafter, of five kinds of attack—involving various combinations of an attack on populations, property and military. Mr. Kahn offers no estimate on which combination is the likeliest, observing that there is no legal or logical requirement that either side in a conflict be guided by reason. He discusses the likelihood of survival under varying conditions governed by the sort of war which is fought, and offers a salutary reminder that “first-priority” considerations do not rule out a proper concern for lesser priorities—any more than in ordinary civilian planning

against that large and well presented background Mr. Kahn lists the problems of the future. Most of them are extremely disagreeable but that does not disqualify them as subjects for sober thinking. He follows with a recital of fourteen possible national policies, ranging from a total renunciation of all violence to a pre-emptive war. In that gamut almost anyone can find his own favorite policy, with a certainty that he will be opposed by advocates of all the other thirteen.

This granted, some thinking on the future is still desirable, particularly if Mr. Kahn is right in his estimate that the decade of the Sixties will prove more of a turning-point than any other period of the century. And if he is right in his reasonable belief that even lucky muddling-through would benefit by some guidance from systematic thinking.

MARK S. WATSON.

Reader's Choice





THE SUNDAY STAR

Washington, D. C.  
June 24, 1962

Books

C-5

## Prophet of Changing Nuclear-War Policies

**THINKING ABOUT THE UNTHINKABLE.** By Herman Kahn. (Horizon Press; \$3.50.)

America's nuclear-war policies have changed radically during the past year, and Herman Kahn has been the prophet of that change. The bible of the new and dominant nuclear school is his book, "On Thermonuclear War," which has sold an astonishing 30,000 copies since publication in 1960. That bible was written for the priesthood, however, and its great length and difficult new language has kept the broad public from understanding just what Mr. Kahn and his fellow thinkers about war are driving at.

This new and most welcome book, "Thinking About the Unthinkable," is designed by Mr. Kahn to do three things:

- First describe his basic ideas in more simple language.
- Second, tell about the strange techniques used by professional military analysts.
- And, third, stimulate more thinking about "unthinkable" modern war.

### Someone Must Do It

Mr. Kahn, director of the Hudson Institute, is a happy extrovert who likes his work. This seems to infuriate a number of persons who attacked him personally after his first book for his failure to affect the long face of an undertaker. But Mr. Kahn points out that someone has to think about nuclear war just as someone has to think about cancer and polio. No rational person can fault him on his logic, though his ideas might sell better if he started each chapter with, "Heaven forbid it should happen,

Western powers make sweeping concessions there and points out, truthfully, that there is no way NATO forces can save the city without starting a nuclear war that could well ruin the United States. Mr. Kennedy replies with the threat of a doubled or quadrupled defense budget. "Such an acceleration of the arms race, dangerous as it is, could still be less dangerous (for America) than either an attack or an accommodation," the President says. Mr. Khrushchev will either have to fall behind in the race or damage his tight economy. The threat makes him back down.

In a small way this was done last year, but Mr. Kahn's scenario is, in effect, an outline of a bolder plan for handling a future life-or-death crisis without the war Mr. Kahn—and the rest of us—hopes to avoid.

This is an important book and an excellent opportunity to see one of the nuclear age's most influential minds in action.

—RICHARD FRYKLUND.

## Other Books

### GENERAL

**A CRUISING GUIDE TO THE CHESAPEAKE.** (Including the Passages from Long Island Sound along the New Jersey Coast and Inland Waterway.) By Fessenden S. Blanchard. (Dodd, Mead; \$6.50.) (Revised Edition.)

**THE THOMAS WOLFE READER.** Selected with an introduction by C. Hugh Holman. (Scribners; \$7.50.)

but..."

The techniques of strategic analysis are the most fascinating part of the book. He gives many examples of mental gymnastics such as "war and peace games," "scenarios" and "abstract models" which simply serve to force analysts to think of all possible dangers and opportunities in various strategies and methods of crisis management. These "sophistications," which could be overlooked in the old days without fear of losing a civilization, are regarded by the administration as necessities in the nuclear age.

**Future Ultimatum**

One rather casually presented "scenario" is alone worth the price of the book. This is a brief story about one way in which some future ultimatum over Berlin might be handled. In Mr. Kahn's little drama, Chairman Khrushchev tells President Kennedy that he will seize West Berlin unless the

All four of Wolfe's novels are represented in order of publication with several fully self-contained passages from each and included also are eight short stories and in its entirety "The Story of a Novel."

**DIARY OF THE CIVIL WAR, 1860-1865.** By George Tem-

**The Sunday Star**  
**WEEKLY BOOK SURVEY**

*The Sunday Star has arranged with the leading book sellers of Washington and suburban areas to report each the books which sell best as a guide what Washington is reading. The numbers represent the rank of each among best sellers at the store named.*

**For Week Ending June 22**

**FICTION**

- |                                 |
|---------------------------------|
| 1. "Ship of Fools," Porter      |
| 2. "Youngblood Hawke," Wouk     |
| 3. "Dearly Beloved," Lindbergh  |
| 4. "Bull From the Sea," Renault |
| 5. "The Reivers," Faulkner      |
| 6. "Agony and Ecstasy," Stone   |

**NONFICTION**



**THE DAILY TELEGRAPH**

**WEDNESDAY, JULY 22, 1981**

**135, FLEET STREET, LONDON, E.C.4.**

**TEL: 01-353 4242. TELEX: 22874/5/6.**

**CLASSIFIED ADVERTISEMENTS: 01-583 3939.**

## BARRIERS TO WORK

**YESTERDAY'S UNEMPLOYMENT FIGURES** were somewhat less awful than the Government had feared or the Opposition had probably in private hoped. It had been thought that distortions resulting from the Civil Service dispute might push the crude total beyond three million; and Mr Foor's decision to table a vote of censure on the Government reflects in part that expectation, and in part the imminence of the long Parliamentary summer recess. Nevertheless there will be no shortage of material for doom-laden predictions. Constructive thinking is likely to prove in rather shorter supply.

From Mr Foot, chastened by his experience in the last debate on unemployment, when his natural bent for irony left him wide open to the charge of frivolousness, we may expect to hear about the Labour party's plans upon a sea of printed money. From the Prime Minister and from, Mr Prior, the emphasis will presumably be on the continuing priority of the battle with inflation, and on schemes to widen job-experience programmes for the young. Unlike the Labour approach, which simply lacks all credibility, this is fine so far as it goes. But it still leaves virtually undented many of the artificial and unnecessary obstacles in the way of pricing people back into genuine employment.

Wages Council awards which seem to disregard ability to pay and make a profit; national wage agreements which ignore both the regional variations in demand for the labour and the differing circumstances of the companies to which they apply; the erosion of differentials between the teenage and the adult wage; inhibitions to recruitment created by regulations about "unfair dismissal" and misnamed

## CND AND THE COMPANY IT KEEPS—I

# Britain's nuclear phoenix

**B** RITAIN, like the rest of Western Europe and the United States, but not the Communist bloc, is experiencing a new phenomenon, the re-birth of the anti-nuclear campaign. Strong among the young and middle-class, and fuelled by concern over the Harrisburg mishap and stationing of Cruise missiles in Britain, the Campaign for Nuclear Disarmament has risen like a phoenix from the ashes.

Twenty or more years ago, there were the Aldermaston marches. I remember when on leave from Germany watching the bedraggled procession traipse past Westminster Abbey. Fresh from the Berlin Wall, I was not impressed.

The anti-nuclear movement is no longer just against the bomb. It is now also against nuclear energy, which will eventually replace oil, if not coal, as a major life-blood of society. For that reason, as well as abandonment of the deterrent, it serves the purposes of the Soviet Union.

Only a decade ago, the Campaign for Nuclear Disarmament was in hibernation. Today, it claims 22,000 members (I joined myself for the purpose of this article), 1,000 local groups and hundreds of affiliated organisations. It still has the active support of Mr Foot, Opposition leader and a veteran Aldermaston marcher, Mr Wedgwood Benn and the Labour party. Soon, it might have endorsement from the T.U.C.

The reasons for its revival are apparent. No one likes the thought of nuclear incineration, nor of radiation affecting one's children.

But what is the anti-nuclear movement? Everyone is aware of CND, and Mr Nott, Defence Secretary, is committed to combating its propaganda. Yet little is actually known about it. Least of all about the Far Left involvement.

**T**HE anti-nuclear movement is something amorphous. It comprises more than 70 organisations

more "liberal" causes over the years, including War on Want, Pax Christi, "the international movement for peace," the Bertrand Russell Peace Foundation and, increasingly, CND.

Clerics play a prominent part in the anti-nuclear movement. A vice-chairman of CND is the Rev. Paul Oestreicher, of Southwark, born in Germany and honorary secretary for East-West relations of the British Council of Churches. Another Anglican activist is Canon Eric James, director of the socialist Christian Action.

The Rev Edward Norman, Dean of Peterhouse, Cambridge, has criticised the role of clerics in C.N.D. While acknowledging Msgr. Kent as a serious, respected and

**The anti-nuclear lobby is  
is no longer just against  
the bomb but against  
nuclear energy and so  
doubly serves the aims  
of Communism, says  
BLAKE BAKER**

influential priest, he also described him as an "agitator," urging sailors at Faslane nuclear submarine base not to handle rockets, the Roman Catholic Church to abandon "excessive loyalty to the Government of the day" and a reassessment of attitudes to Communism. Ironically, the clerics in CND have been described by the Far Left as "vicars and faith-healers."

A flood of propaganda is produced by CND, based at Finsbury Park, and associated organisations. It includes pamphlets, leaflets, badges, posters, stickers, cassette recordings, pens and even balloons. The banned BBC film, *The War Game*, is on regular hire as

a pamphlet, "Fright Train," which includes a detailed map of the route through London in 10 hours, saying derailment was a disaster.

There have been at  
derail the train.

**WISE** also publicises  
Far Left organisations in  
and Europe.

At the same Oxford the Political Ecology Group in which Peter biologist and sociologist anti-nuclear campaigner studied in Germany and thorough knowledge of pean anti-nuclear mov grass-roots level, is a group appealed for 1979

At Cambridge, the Radiation Health In Service, co-director of the Garrison, an American graduate student, author of *Hiroshima to Harrisburg*, is active in the anti-nuclear movement in Britain. In Birmingham, there is Nuclear Action, distributing thousands of leaflets.

Then there is Europe based near Euston, in April, 1980. Through P Thompson, leading C.N. gandist, and Mary Kal currently appealing fo half of it already raised, itself as a "centre for ting an all-European m Expenses have been h targets for 1981 include ing liaison with East European movements' major European confere

International links. About 1,000 CNDers travelled to Brussels last week to join in the march against the headquarters. Continentals have come to Brussels for the demos.

**T**HE anti-nuclear movement proliferates. Surprisingly, perhaps its greatest propaganda was a condemnation by

"equal opportunities" — these and so many other distortions to the labour market serve unnecessarily to lengthen the dole queues, most of all among the young. Not all of them are susceptible to Government action. But those that are cry out for tackling, while, in the case of some that are not, money spent on selective subsidy to jobs might be better spent than that committed to "work experience" with but modest prospect of long-term employment resulting.

## THE NATION'S VOICES

THE FOREIGN OFFICE is obviously a little shame-faced about its persistent attempts to reduce the External Services of the B B C. The latest cuts (to save £3 million by removing seven language services, including Spanish for Europe, French and Italian) were announced to coincide with the larger row about Mr Norr's reorganisation of the nation's defences and so slip by unnoticed. Now the Foreign Affairs Committee of the House of Commons reports that when it heard evidence on the External Services, no one in the Foreign Office took the opportunity to inform it about the imminent reductions. Neither ploy to distract attention has been successful.

Even without the new information, the House of Commons Committee was unimpressed about the

prices more than 10 organisations, including many environmentalist groups, such as Friends of the Earth, the Ecology Party, Greenpeace which operates its own trawler Rainbow Warrior, the National Council of Churches, the National Council of Civil Liberties and even the National Federation of Women's Institutes.

There are parents' and local residents' associations, a host of political parties, including the Liberals, Scottish and Welsh nationalists. There is the so-called "brown bread and sandals brigade." There is also the Far Left, the Communist party, the Trotskyist Socialist Workers party and International Marxist Group, the Russian-front World Peace Council and others. There are numerous academics and intellectuals.

The chairman of CND is Hugh Jenkins, former Left-wing Labour M P for Putney and one-time Arts Minister. The general secretary is Msgr. Bruce Kent, once private secretary to the late Cardinal Heenan, who has espoused ever

are other "horror movies."

Some of the propaganda is bizarre, and aimed to frighten. One item is a facsimile front page of the DAILY MIRROR, bearing the by-line of a former staff member, headlined "Cloud of Death," and postulating 2,000 dead and 50,000 at radiation risk following a blow-up at Sizewell nuclear power station, Suffolk.

Serious problems have been caused for the Central Electricity Generating Board with marches and demos. In Cornwall, drilling for the site of a new nuclear power station was blocked by demonstrators, with women chaining themselves to a drilling rig.

That leads to the affair of the nuclear waste train, and international connections. In Oxford, there is WISE, the British end of the World Information Service on Energy, based in Amsterdam, and linked by telex with other offices in Brussels, Helsinki, Copenhagen, Tokyo, Verona, Barcelona and Washington D.C.

It was WISE which published

Lord Mountbatten, a model if ever there was belief in the nuclear

Following an appeal Chester city council, 70 localities declared their area free zones." The G L C, Ken Livingstone, its new leader who features free Trotskyite publications, donated civil defence, decided to give substantial CND.

The anti-nuclear move latest mass protest moving the relative decline Anti-Nazi League, is sum many thousands of well people. It is international organised. It mounts a considerable propaganda much of it unseen by the public. Its financing is considerable.

To most, CND is against the unimaginable what is less known is the considerable involvement of Left. With that, I will do row.

## 2 HOME NEWS

THE GUARDIAN



*Helping hands — children help cut turf which another lays on top of the shelter.*

## Testing time begins in a nuclear shelter

By Paul Keel

A do-it-yourself nuclear shelter should have taken two men two days to construct, according to a Government pamphlet. But Ben Hayden, who followed the Home Office's instructions, found that he needed six days and a lot more assistance.

Before he and his dozen or so helpers began building the tent-like bunker sunk in the urban soil of Limehouse, East London, he first had to hire the scaffolding that serves as its superstructure. Then he had to acquire the

plywood that forms the shelter's inner walls and roof.

But at noon today, with the task completed and well behind the schedule indicated in the Home Office's publication, Domestic Nuclear Shelters Technical guidance, Mr Hayden, a 23-year-old van driver, will crawl into his Armageddon sanctuary built to Government specifications to begin a two-week trial of its feasibility.

Mr Hayden says this is the period of confinement recommended in existing Home Office guidelines — a notional period after the

blast during which the dangers of radioactivity in the air would have receded.

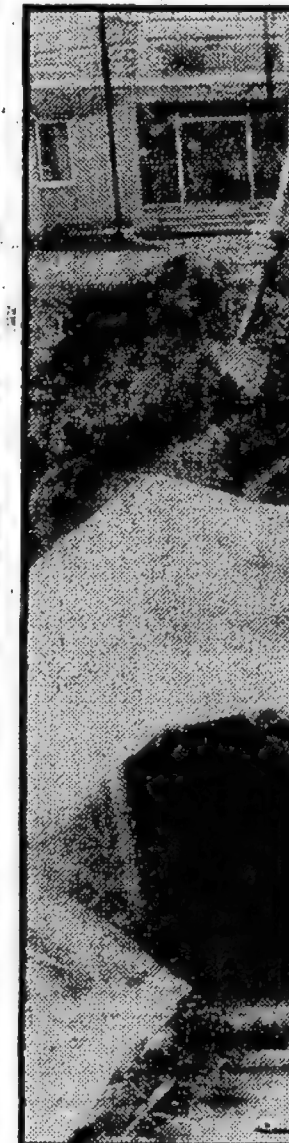
To guard against the anticipated pollution entering his refuge, Mr Hayden has followed the guidelines and stuffed wire-wool down the two lengths of plastic drain-pipe that form the bunker's ventilation.

The shelter is designed for two people with a fortnight's provisions. But sharing the cramped area (about the size of a two-man tent) with Mr Hayden will be just his supply of tinned food, water and a bucket for sanitation.

Putting the finishing touches to the shelter, erected on a patch of wasteland overshadowed by council flats, Mr Hayden insisted yesterday that his purpose was to give the Home Office's advice an objective trial.

He is a member of the local branch of the Campaign for Nuclear Disarmament, but he said the exercise was not being mounted in the spirit of a protest.

He intends to spend the next 14 days in the shelter, isolated from the outside world. He thinks this will prove to be the biggest challenge to his endurance.



*Mr Ben Hayden and his*





## Nukegate glasstone.blogspot.com

1,102 Tweets



**Nukegate glasstone.blogspot.com** @Nukegate · 2h



Well done to lefty GUARDIAN paper for finally going back to supporting news coverage of Russian nuclear bomb shelters being prepped for Putin's so-called latest "secret special op", world war three (better late than never, as in world war 2 with shelters):



theguardian.com

Putin looks back to WWII with refurb of Stalin-era bomb shelters

Although a missile attack deep into Russia is unlikely, bunkers built long ago are being made ready for use

ABOVE: left-wing **Guardian finally reports (better late than never) Russia's cold war Stalinist nuclear shelters (developed from the results of Stalin's nuclear tests, as we will reveal in detail in this blog post, below) are being prepared for WW3 in 2023, but naturally claims it is not for WW3, but merely in case a missile goes astray from Ukraine into Russia (the official "Brezhnev era apparatchik"-line, strike that and replace Brezhnev with Putin): "Although a missile attack deep into Russia is unlikely, bunkers built long ago are being made ready for use."** Our twitter feed, <https://twitter.com/Nukegate> keeps you informed of the latest Russian TV nuclear war plans and shelter preparations. When Russian shelters are fully ready, we can expect the Ukraine war to escalate rapidly. Yahoo news for instance reports:

**"Russia's Secretly Splurging on Bomb Shelters 'Everywhere,' Report Says. The Kremlin has quietly ordered an upgrade to bomb shelters across Russia, according to four former and current Russian officials who spoke with The Moscow Times. "An order was given from Moscow to carry out this work everywhere—inspection and repair," ... Local authorities have reportedly spent hundreds of millions of rubles on the bomb shelter preparations, which allegedly began in February 2022 after Russia invaded Ukraine. The preparations will reportedly continue this year. And although in some regions authorities have installed signs near the shelters, some authorities have sought to downplay the updates, in an apparent attempt to avoid causing panic. ... Moscow has refused to allow U.S. inspections on its territory since August, and NATO ambassadors said in a statement last week that Russia is failing to comply with its obligations under the New START Treaty. ... Russia accused Ukraine without evidence of preparing a dirty bomb—a weapon with both conventional explosives and radioactive material—as fears mounted that Russian President Vladimir Putin was working to create a justification to use nuclear weapons."** Russia's nuclear labs also released the following photo of Western neutron bomb disarmament fanatic Dr Joseph Rotblat patting the Russian nuclear bomb of Russian neutron bomb inventor Dr Boris Litvenko (a war mongering USSR restoration advocate, the guy with big eyebrows on far right). Rotblat is a hater of Western nuclear weapons and Western civil defense, but not Russian.





**Dr Rotblat of PUGWASH and Russian mass murder with Litvi**









Sunday 21 May 1978, San Francisco Examiner

## ANALYSIS &amp; OPINION

# The Neutron Bomb — Is It 'Clean' Or 'Dirty'?

By Tony Geraghty and Reuben Amstutz

IN THE pale green corridors of the Pentagon a batch of unofficial photocopies has been taped to the walls. They read: "Bombs and arrows kill people but leave buildings intact." The notices parody the objections of the Kremlin and others not so much to the longhairs as to the Lance and other missiles capable of delivering NATO's newest and most controversial weapon, the neutron "bomb."

The "bomb" — actually, a shell or missile warhead — is a nuclear device in which the explosive energy is mostly released as neutron radiation rather than heat and blast. Like the arrow, it kills people, sometimes slowly and painfully. Unlike the arrow it penetrates buildings and tanks to do so. But beyond an immediate blast area a few hundred yards across, it leaves the buildings intact while releasing an invisible bombardment of neutron radiation which causes damage to the mammalian central nervous system.

It is the weapon's novel capacity to destroy life while

words of Gen. Johannes Steinhoff, former chairman of NATO's Military Committee, the new weapon "makes the unthinkable conceivable."

Eric Bishop, professor of Nuclear Physics at University College, London, a nuclear weapons pioneer who has converted to nuclear disarmament, says, "It is the weapon par excellence of the aggressor who is determined to take over intact cities and industries of another country."

Herbert Scoville, former deputy director of the CIA, believes that enemy soldiers "receiving even ten times a lethal neutron radiation dose could still continue to fight effectively for about half an hour and die only a day or so later..." By implication, such troops would be converted into kamikaze squads.

On the Soviet side, Dr Boris Petrovsky, U.S.S.R. Public Health Minister, has used quite different arguments: that the multiple use of neutron warheads would not mean that damage would be limited, as is claimed, or that civilian casualties would be light. He recalls that individual air-dropped bombs of the Second World War theoretically caused only a few dozen yards' destruction



LANCE MISSILE TEST FIRING IN NEW MEXICO

the destructive power of existing tactical devices now aimed at and from Europe. That total is 12,000, of which about 7000 are in NATO hands. Each averages 20 to 30 kilotons of explosive power — equivalent to 20,000 to 30,000 tons of TNT and compares with the 20 kiloton weapon dropped on Hiroshima. The warhead on Russia's latest Euro missile, the SS-20, is thought to be equal to a million tons

and the first device was tested in 1963. The idea was further fleshed out as the Spring anti-ballistic missile, tested in 1965. Then the SALT I agreement of May, 1972, froze ABM systems and put the neutron plain into storage. Only briefly, however, because U.S. interest in such weapons was reawakened a year later by the Schlesinger doctrine of "flexible response" to Soviet attack.

James Schlesinger was then President Nixon's Defense Secretary, and he proposed a gradual escalation, rather than all-out nuclear war from the start of hostilities. Over the next three years the neutron idea was discussed by NATO's Nuclear Planning Group, of which Britain's Defense Minister was a member, and was consistently applauded.

The fact that the neutron bomb is not deployed, and that West European opinion is still

deeply divided about the weapon, is the result of a complex blend of historical accident, miscalculation in the West about Russia's growing capacity to make nuclear war, and the long, sometimes chaotic processes by which decisions arrive at important decisions.

The concept of "enhanced radiation" weapons has a long

history. It is not that NATO had an answer to the chronic 3-to-1 advantage of Warsaw Pact tank forces.

Subsequently both NATO Secretary General, Joseph Lunn, and its Supreme Commander, Gen. Alexander Haig publicly appealed for NATO to adopt the weapon. All seemed set to go ahead — but in the meantime two things had happened: 1) Soviet power had grown, 2) the military's enthusiasm for the neutron bomb was by no means shared by everyone.

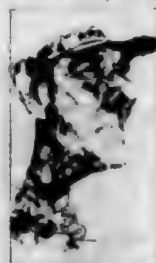
During the years that U.S. military scientists worked on a tactical neutron warhead the Soviets were working to achieve nuclear parity with the U.S. In every other area whether battlefield weapons or intercontinental ("strategic") missiles. As NATO Commander Haig admitted last October, this new parity works. Western strategists. It inhibits NATO's nuclear planning and helps explain why Moscow feels confident enough to make the West's latest nuclear weapon a major issue.

In other words, when the West had a substantial advantage over the Russians in larger, "dirtier" weapons, the neutron bomb was a smaller, cleaner or response alternative to a sudden conventional Soviet tank advance. But now that the neutron bomb is a practical possibility it is no longer simply an alternative defensive weapon, it disturbs an emerging balance of power and in that sense is destabilizing. It is this coincidence of events which has made the new weapon so vulnerable to public opinion and has led the Soviets to exploit the dilemma again and again.

In recent months the press took up the story worldwide, some treating the weapon as the latest, most fashionable artifact from the world of the Strangelove. NATO did not, as expected, vote in favor of deploying the weapon in Europe. President Carter did not, as expected, approve its production. The weapon remains in limbo. The publicity seems to have been largely responsible.

The neutron bomb seems certain to come up at the next NATO summit meeting at Washington this month. By a near coincidence, while NATO gathers in Washington, the U.N. in New York will be holding a special General Assembly session on disarmament.

Tony Geraghty and Reuben Amstutz write for the independent



NAK

leaving property intact that has generated so much hostility on both sides of the Iron Curtain. While there is plenty of emotional resistance to the bomb as a "people killer," many noted Western authorities who have had reason to think about the likely patterns of future nuclear war believe it raises more rational worries. In one way or another, they be-

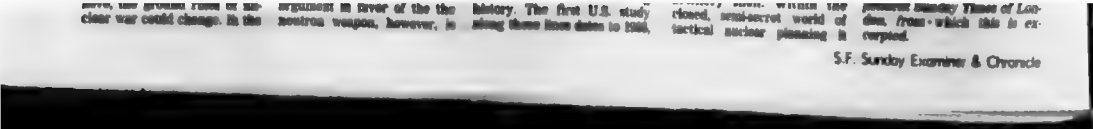
**The multiple use of neutron warheads would not mean limited damage . . . or light casualties**

Yet "it is enough to recall the ruins of Stalingrad, Coventry, and Dresden."

There are, of course, contrary views held by equally informed minds. In general, these hold that it is better to have a deterrent which is credible, and can be used in open countryside against tank formations, than a Pyrrhic weapon which scores on a grand scale, destroying friendly cities.

Perhaps the most persuasive

Honest Effects of Nuclear Weapons!





of the Ukrainians, deported to remote parts of Siberia, are uprooted and so weakened in their possible political, national, and even physical resistance, that they cannot be expected to start any irredenta. Besides, such procedures are an excellent safeguard against plebiscites in the future. Ideological purity of the country of Proletariat is also better preserved if Spaniards, who had fought against Franco in the Civil War and had to flee from their country, are settled in the Uzbekistan; they had been given all sorts of promises by Moscow, only to find themselves deported and forced to lead a meager existence, toiling in the cotton fields, side by side with the Koreans just as ill fated, transplanted here sometime between 1934-1939 after the border skirmishes, constituting a sort of an unofficial war between the Soviets and Japan.

Such methods seem completely incredible and repulsive to the civilized mind. Obviously they are indicative of a profound contempt for human individuality. One infers

live a definite blow to the state as an institution resulted in the creation of a super-state relentlessly exploiting the individual.

As a result of a process of thorough identification, the new rulers have taken over the methods and ideals of the Russian tyrants of the old past and under the disguise of sublime ideals made them acceptable not only to the vast masses of their own people but even to followers and sympathizers all over the world. Anxiety and frustration of the post-war world superimposed on the inherent weaknesses of our social structure have created in the masses a deep need for ideals backed by material power. This collective longing invests the Soviet system with an aura of salvation which makes sympathizers overlook the suffering and de-

wonder at this tragic paradox of his better understanding of the Russian people. In this review the main points of our analysis are: the rise of Socialism, the Bolshevik Revolution, the hatred, lust for revenge, and violence which replaced rapidly the original ideals of the movement; the Dictatorship of the Proletariat itself. Ideas growing in an atmosphere of aggressiveness and hatred, could not be based on ethical values. On the contrary, the masses were fanatical, corrupt, and often deluded by illusions.

In the final crystallization of the movement, individuals of special mentality were selected; the Dictator, gained the upper hand. He exterminated his rivals and possible opponents, and sought to blend his personal hatreds and

level. On this level, they set themselves the task of liberating the masses of the formerly oppressed Russian people. They evoked the desire for liberation to the oppressed proletariat and the oppressed nationalities of the whole world. They have been successful in promoting Communism, where they have formed the core of the new ideal which superseded the old one. They have asked to surrender their desire for personal freedom, exchanging these goals for the achievement in the present and uncertain future in some remote future.

Certain situations in psychology create certain fresh features. Stalin's



pression on which it is based.

It is possible then to describe the evolution of the Soviet Union as an immense accumulation of all these evils of oppression which were characteristic not merely of capitalist society but of autocracy. The rationalization given for

spite certain flesh features. Stalin's collective superego, built through processes, necessarily involves a unconscious. Hence, it should not surprise that situations arising in

**Dr Gustav Bychowski (1895-1972), *Dictators and disciples* (1948), dedicated to his only son, killed 22 May 1948.**

"Controlling escalation is really an exercise in deterrence, which means providing effective disincentives to unwanted enemy actions.

Contrary to widely endorsed opinion, the use or threat of nuclear weapons in tactical operations seems at least as likely to check [*as Hiroshima and Nagasaki*] as to promote the expansion of hostilities [**providing we are not in a situation of Russian biased arms control and disarmament whereby we no tactical weapons while the enemy has over 2000 neutron bombs**]." - **Bernard Brodie**, pvi of "Escalation and the nuclear option", RAND Corp memo RM-5444-PR, June 1965.















Zelensky meets with Putin in Paris in Dec 2019. SOURCE: Ian Langsdon AFP/Getty Images

Flash update (27 May 2023): Russian TV discussion of bombing Alaska to try to de-escalate fascist involvement in Ukraine, [click here](#) (link to twigger account nukegate which we set up to boycott lying propaganda from mainstream BBC/SKY/ITV etc Russian dogma). *More nuclear warnings IN RUSSIAN LANGUAGE TO INURE (INURE = "ACCUSTOM TO SOMETHING UNPLEASANT") RUSSIAN PEOPLE IN NEED FOR STARTING ww3 when all their Stalinist nuke shelters have been 100% restocked with water, canned food and fresh geiger counter batteries. NOT WHAT ALL THE CHARLATAN LYING BIGOTS IN WHAT IS POPULARLY CALLED B.B.C. AKA BRITISH COLD COMMIES ENGLISH PROPAGANDA "BLUFF". NO MORE SO THAT DR GOEBBELS THREATS TO MURDER JEWS WERE A BLUFF IN 1930s YOU QUACK MASS MEDIA FRAUDS. WE NEED CREDIBLE DETERRENCE AND DEFENCE NOW INSTEAD OF GAMBLING ON YOUR LIES. YOU ARMS CONTROLLING DISARMAMENT LIARS SAID PUTIN WAS BLUFFING LAST YEAR WHEN HE MASSED TROOPS ON UKRAINE BORDER FOR THE INVASION AND WAR. YOU WERE LYING. You know this, we know, and you know we know! Please refer to Nukegate a/c on twitter for further sad news as this 17 year old technology blogger site is finished (it has to be updated directly in html, not plain english, with mark up for new para, bold, close para, italics, etc, leading to endless errors and making it almost impossible to correct and update!)*

## CLEAN NEUTRON BOMB PROGRESS: RIPPLE NUCLEAR TESTS



UCRL-BOOK-219136

DECLASSIFIED DATA, UNCLASSIFIED PAPER:  
<https://www.osti.gov/biblio/1016296>

Contributions to the Genesis and Progress of ICF

J. H. Nuckolls

99.9%  
 CLEAN  
 RIPPLE II

10KT KINGLET PRIMARY AND RIPPLE II  
 PURE FUSION SECONDARY STAGE 9.96 MT  
 DOMINIC - HOUSATONIC 30 October 1962



Beginning in 1943 at Los Alamos, Teller developed a liquid density Super scheme (1, 2). However, late 1940s' calculations by Fermi, Stanislaw Ulam, John von Neumann, and others indicated an uncompressed Super is not practical.

In early 1951, Teller and Ulam proposed two-stage compressed Supers. Teller advocated radiation implosion coupling of the two stages (1,2). In a radiation implosion, an atomic bomb primary and a separate thermonuclear secondary are enclosed by a radiation case. A giant pulse of thermal X-ray energy radiated from the high temperature primary explosion is channeled by the

radiation case to implode the secondary. The implosion enables efficient TN burn by reducing the fusion burn time relative to the inertial confinement time and the radiative cooling time.

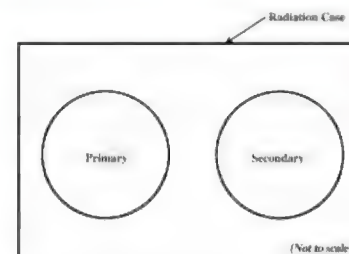


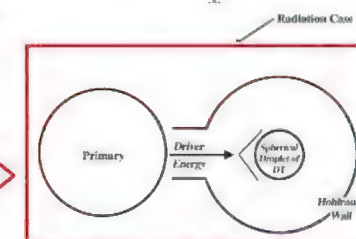
Figure 1. Teller's Radiation Implosion H-Bomb Scheme

For example, a spherical implosion increases the specific burn rate faster than the inertial confinement time decreases. Specific burn rate is proportional to density, which is inversely proportional to the cube of the radius. Inertial confinement time is proportional to the radius. At constant temperature, total burn-up increases with rate  $\times$  time, which is inversely proportional to the square of the radius.

I realized that a few hundred electron volt radiation temperature might suffice to implode and initiate a very small-scale fusion secondary. Radiation losses into a hohlraum wall decrease with more than the fourth power of the radiation temperature. With low radiation temperatures, excessive wall losses can be avoided even though the surface to volume ratio increases as the scale is decreased.

## Non-nuclear primary, indirect drive scheme

Beginning in early 1960, I used the weapons programs' latest radiation implosion and TN burn codes to explore the feasibility of igniting a DT fusion micro-explosion with a tiny radiation implosion. I postulated that a "non-nuclear primary" could be invented to energize a tiny radiation implosion. I imagined several



Implosion symmetry is enhanced because the radiant energy absorbed in a thin layer of the high Z walls of the hohlraum is efficiently re-radiated multiple times and has a velocity a thousand times larger than the implosion velocity of a fusion capsule. Energy radiates from hot areas to cooler areas, rapidly equalizing temperatures.

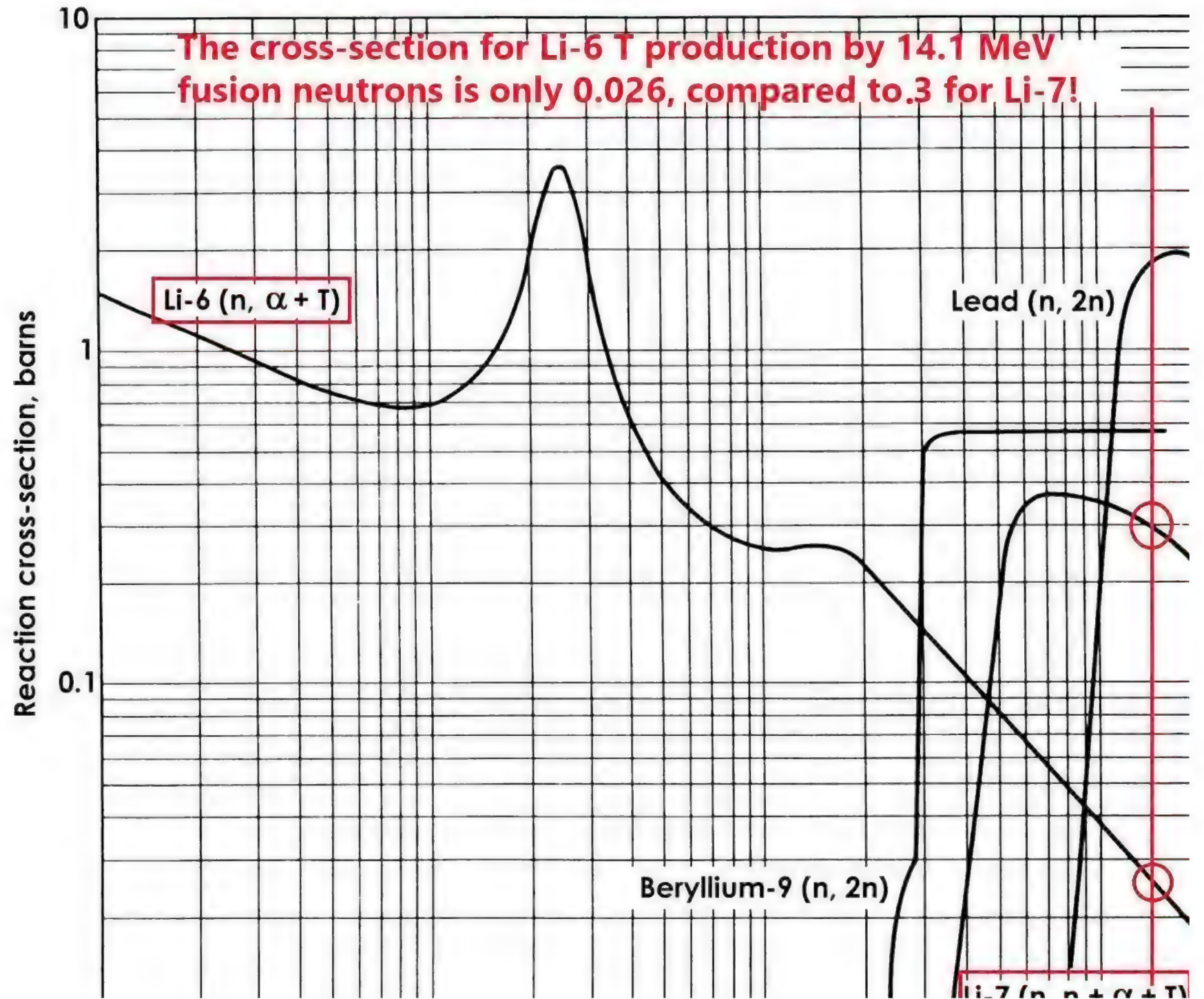
Growth rates of fluid instabilities are reduced because kilovolt range thermal radiation from a few hundred eV temperature black body rapidly ablates the unstable interface in low atomic weight materials. Density gradients also reduce instability growth rates. In 1960, we understood that favorable density gradients are created, and that radiation transport effects reduce growth rate of fluid instabilities (suggested by Livermore physicist Chuck Leith). But we did not have a quantitative understanding.

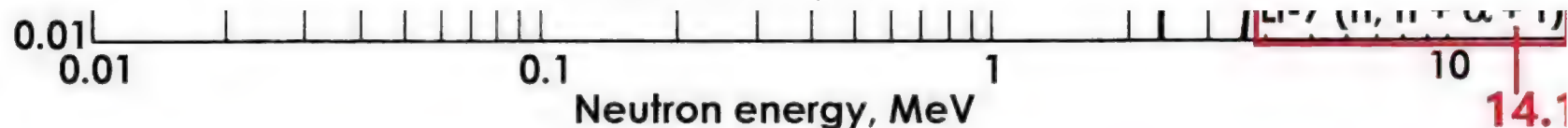
Distortions and instabilities generated by energy concentration processes located in the driver are effectively decoupled from the spatially separate secondary implosion when the secondary is energized by black body radiation from the driver-heated hohlraum walls. Consequently, radiation coupled drivers and fusion capsules may both be operated near their stability limits to achieve maximum performance.

ABOVE: Nuckolls has a freely available declassified data filled book on 99.9% CLEAN neutron bomb design (e.g. John Nuckolls on 30 October 1962 tested a 9.96-megaton bomb isentropically and isotropically ignited using sub keV x-ray spectrum from a 10 kt Kinglet primary stage, delivered via foam baffle control in a specially shaped pulse history on to a pusherless D+T sparked Li6D shell Ripple II secondary stage, resulting in a 99.9% fusion, 0.1% fission detonation reported openly in the New York Times that very day!). The Ripple II nuclear test secret is shown in the graph above: *why lithium-7 is actually better in boosted clean secondaries than lithium-6!* For 14.1 MeV neutrons from T+D fusion, lithium-7 has a 0.3 barns cross-section, compared to just 0.026 for lithium-6! Plus, it gives ANOTHER neutron UNLIKE lithium-6. This was proved in the successful 9.96 megaton Ripple II secondary stage test (99.9% clean bomb, employing 10 kt boosted Kinglet primary) by John Nuckolls; Dominic Housatonic, on 30 October 1962. More about this Housatonic Ripple II secondary stage physics development, later in this blog post. But first:









**The Ripple II nuclear test secret: why lithium-7 is actually better in boosted clean secondaries than lithium-6! For 14.1 Mev neutrons from T+D fusion, lithium-7 has a 0.3 barns cross-section, compared to just 0.026 for lithium-6! Plus, it gives **ANOTHER** neutron **UNLIKE** lithium-6.**

Испытания ядерных зарядов					RUSSIAN DEVELOPMENT OF CLEANER LOW YIELD TACTICAL NUCLEAR WEAPONS / PNEs
TEST	DATE	PLACE	KILOTONS		
№ по каталогу	Число, месяц, год	Место проведения испытаний	Энерговыделение, кт ТЭ	Примечание	
245	13.02.1966	СИП шт.Е-1	125	Испытание заряда с термоядерным блоком, содержащим дейтерий под большим давлением	PURE DEUTERIUM GAS UNDER HIGH PRESSURE
280	07.01.1968	СИП шт.810	7.5	Физический опыт для определения минимального количества дейтерия, которое может устойчиво взрываться.	
294	09.11.1968	СИП шт.606	4	С 1967 по 1970 гг. испытывался заряд с термоядерным блоком, дающим минимум наведенной активности. Всего проведено 8 таких опытов.	TEST OF MINIMUM YIELD FOR PURE DEUTERIUM FUSION CHARGE BURN
296	18.12.1968	СИП шт.508	8.9		
299	13.04.1969	СИП шт.24П	0,001-20		
302	04.07.1969	СИП шт.710	15		
333	22.03.1971	СИП шт.510П	67	Испытание особо "чистого" заряда с высоким коэффициентом термоядерности (около 1%)	EXAMPLES OF NUCLEAR TESTS FOR DEVELOPMENT OF LOW YIELD CLEAN CHARGE
357	28.03.1972	СИП шт.191	6		
377	10.12.1972	СИП скв.1204	140		
382	23.07.1973	СИП скв.1066	212		140 KILOTON TOTAL YIELD CHARGE OF ONLY ~1% FISSION YIELD
400	31.05.1974	СИП скв.1207	71		
422	08.06.1975	СИП шт.165	32		
616	18.08.1983	СИПНЗ шт.А-40	0,001-20		
658	28.12.1984	СИП скв.1353	0,001-20		



SECRET - RESTRICTED DATA  
(Covered up, known to specialists)  
Output from 13 types of nuclear  
warheads (EM-1 types 1-13)

Type	Nuclear Design	1 km range (Neutralise 1000 people on surface 4000 ft or 5000 ft)	2 km range
1	Gun-style fission	84.1 R/kt	0.105 R/kt
2	Spherical - implosion with U238 reflector	22.3 R/kt	0.0325 R/kt
3	Liner - implosion unheated (<1 kt) Be reflector	84.1 R/kt	0.105 R/kt
4	Liner - implosion heated (>1 kt) Be reflector	83.6 R/kt	0.142 R/kt
5	Spherical - implosion, Be reflector, heated (>1 kt)	131 R/kt	0.196 R/kt
6	Spherical - implosion, Be reflector, unheated (<1 kt)	55.6 R/kt	0.0713 R/kt
7	Earth - penetrator	83.6 R/kt	0.142 R/kt
8	Fixed yield thermonuclear	66.7 R/kt	0.117 R/kt



Russian state TV nuclear war threats - May 2023 round up



50.3 R/kt	0.113 R/kt
<u>0.666 R/kt</u>	0.000853 R/kt
83.6 R/kt	0.142 R/kt
20.0 R/kt	0.0452 R/kt
<u>1660 R/kt</u>	4.51 R/kt

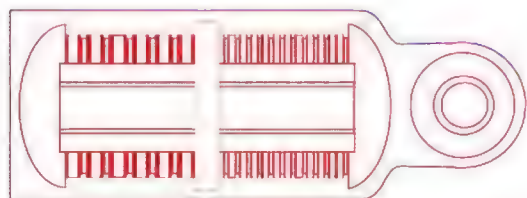
$R = \text{RADS or cGy in tissue}$   
 13 Samuel Cohen's  
 neutron bomb (<20 kt)  
 Heronuclear (>5 kt)

History is far more predictably deterministic than we would...



ABOVE: **neutron bombs alone produce huge deterrent neutron output at low kiloton yields. e.g. 1660 rads/kt at 1 km from a ground burst type 13 neutron bomb on silicate soil compared to merely 0.666 rads for the type 10 low-yield-option of a B61 or W88 bomb with multiple yield options, called "dial-a-yield" (the data above is calculated from the neutron dose equations in EM-1, 1984), the reason being that the low yield option just involves an unboosted fission primary stage (which is too weak without boost gas to compress the secondary stage enough to cause that to explode) and the lithium deuteride in the secondary stage acts as a "neutron sponge" that absorb most of the neutrons from the unboosted primary stage, preventing it from being an efficient source of neutrons, and Northrop's declassified EM-1 says in Table 8.10 that Russia and China - since only Russia and China have neutron bombs since**

*NATO's W79's were disarmed in 1992 by loons* - have two types of neutron bomb, a low yield and a high yield version, with yields 1-5 and 5-15 kt, with burst heights of 50-100 and 100-300 m, respectively. I have also put up a video explaining that although Putin and friends are sick loons by our Western standards, ideology and national financial issues may mean he feels - like Hitler in 1939 - impelled try to get allies on board (like Hitler did in getting Stalin to agree to jointly invade Poland in September 1939), to start WW3. I hope I'm wrong! But I remember my boy scout's motto "be prepared" and the old Royal Observer Corps motto "forewarned is forearmed" (both these mottos are anathema to the left, proving them to be right). Also, notice that when Hitler and Stalin invaded Poland in September 1939 according to the secret aggression annex to their joint "non-aggression treaty" of August 1939, Hitler believed that he could avoid WW2 by coercing the UK into a "peace pact" due to the fear of London being bombed. By analogy, if Putin and his potential allies do start WW3, they won't admit they are doing it. They simply declare it is another secret special military operation to coerce Western imperialists into peace, not a deliberate triggering of WW3 (Hitler's ploy to curry favour with his people and maybe even what he believed in his own delusional alternative universe, who knows/cares?).



**B61 secondary stage "sausages" contain U235 rings**

"3/13/23 NEWSWEEK: "I think that [Putin's] nuclear threat is a real threat," Russian lawmaker Grigory Yavlinsky told Newsweek, echoing Putin's remarks that the warnings are "not a bluff." "It's a real threat. That kind of weapon is such a serious thing...this is not [just] words, this is a real factor, which you have to take into consideration in the current situation. That's it," he said.

Russian State TV nuclear war propaganda 7 April 2023



## The Western neutron bomb disarmament Western nukes

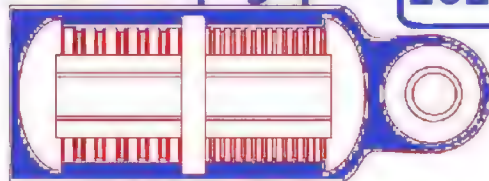


**YEAR:  
1992**

**Russian World Peace  
Council propaganda  
eliminated West's W79**

**B61 "stop-gap":**

**2023**

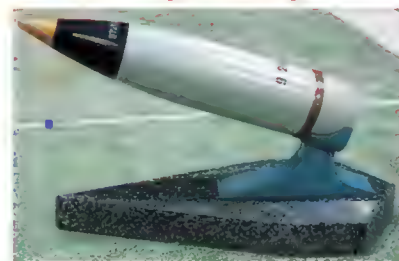


B61 secondary stage "sausages" contain U235 rings

**Lithium deuteride in secondary sausages of  
B61 soak up unboosted "tactical" neutrons**



**Russian neutron  
warhead, product  
"152" (2.5kt)**



NATO REVIEW: "In 2022, the spectre of nuclear weapons use has returned to centre stage in Europe. From the very beginning of Russia's invasion of Ukraine in February of this year, Russian President Vladimir Putin has brandished his country's nuclear sword in an attempt to compel Ukraine to capitulate to Russia's demands and to deter NATO from intervention. This is the most significant attempt at prolonged, consistent, and conscious nuclear coercion against NATO and its partners in almost forty years. We must therefore reflect on Russia's nuclear coercion with considerable scrutiny. ... With Russia's arsenal of roughly 2,000 tactical nuclear weapons, the escalatory threat that Russia presents below the strategic nuclear level – that is, in using nuclear weapons with smaller yields and shorter ranges – regrettably forces NATO to meet that threat with its own credible option. ... While NATO issued a new

Strategic Concept this past June that highlighted the role of nuclear weapons in Allied deterrence, the document was light on specifics, suggesting that Allies would rely on an "appropriate mix" (para. 20) of nuclear and conventional military systems. As Russia's military position continues to deteriorate in the face of heroic Ukrainian resistance and international sanctions, and as Moscow becomes increasingly isolated from the international community, it is not difficult to imagine that Putin will begin to turn more frequently and more aggressively to his nuclear signals in order to extract political concessions from the West and Ukraine. Having been maneuvered onto Thomas Schelling's "slippery slope" of competitive risk-taking, is NATO equipped to respond credibly to Russian threats of nuclear escalation?" (HEY MATE! You guys need plans for more than just "threats"!)



Russian State TV Belarus tactical nukes are to be used aga...



Nuclear weapons have been used again, as threats, and the fascist Russian supporting CND backing media have ironically dismissed them as parlour jokes (unlike the 1962 Cuban missiles crisis, when the USA had a massive superiority for far more credible deterrence than we have today, used by Kennedy in his 22 October TV broadcast to deter the accidental launching of a single missile from Cuba against any city in the West), so already we are seeing on BBC TV and Russian State TV attempts to deter escalations needed to end the Ukraine war. Russian appeasing or ignorant media is itself being coerced by reality into occasionally allowing hints of realism to enter the public domain, since they'll go under if they keep ignoring it or simply ridiculing it as "unthinkable" and therefore "taboo", inspired by the decades of Moscow's World Peace Council lies (summarised in places like Rhodes' "history" books, *Arsenals of Folly* and *The making of the atomic bomb* which lie about nuclear weapons). Here's what to do to immediately kick the crap out and end the Ukraine war: list the conventional megatonnage in each World War, the nuclear equivalent, bearing in mind that effects like blast and radiation areas don't quite scale up directly in proportion to the total energy release, especially for concrete cities where the concrete absorbs radiation and blast energy efficiently as in 1945 Hiroshima (where there were few concrete buildings compared to modern cities, but enough for Penney to determine shielding factors which Glasstone ignored). For example, 2.5 megatons of bombs were dropped in World War II, their average yield being of the order 0.0000001 megaton (0.1 ton), so if we conservatively ignore the cumulative shielding by concrete buildings in a city and use open desert cube-root distance scaling (two-thirds power for damaged or lethal areas) the number of 1 megaton bombs needed to create the same damage (the so-called "equivalent megatonnage") is obviously equal to  $(2,500,000/0.1)(0.0000001^{2/3}) = 539$  megaton thermonuclear explosions.

Russian nuclear weapons propaganda lies debunked as evi...



This calculation can be repeated for other wars as a homework exercise, then you should repeat it over again for the much smaller *pre-war* stockpiles used for "deterrence" before WWI and WWII, and ***study a recent, honest summary of the cancer data from radiation due to the effects of actual nuclear weapons use in war.*** This alone gives you a bloody realistic basis to quantitatively grasp the mumbo jumbo words used by bigots to weave their history out of whole cloth. Now you are welcome to argue the toss about the details of accurate energy comparisons: for bigger explosions you people get up to 4.7 seconds per mile distance before the blast arrives to duck and cover from blast winds and flying debris, lacking in lower yield conventional surprise bombings where the damaged area is smaller (the average shock front speed is faster near ground zero in bigger explosions, for example taking 40 seconds to arrive 10 miles from 1 megaton, not 47 seconds). So civil defence makes more sense in nuclear war than in conventional war, ***although the Vietcong used good tunnel shelters to take over 5,000,000 tons of conventional bombs for victory through survivalism, propaganda in the enemy press, and enemy financial effects since digging holes was cheaper than making dropping bombs, contrary to every taboo ever invented by fascist liars to "disprove civil defence as a joke",*** as indeed did London in withstanding 12,000 tons of small conventional bombs in the Nazi Blitz without surrender, contrary to PM Chamberlain's prewar lying about such bombs inducing defeatism and surrender (it is equivalent to megatons of nuclear weapons yet had the exactly opposite effect to Chamberlain's lies, which is still ignored due to populist lying about WWI UK civil defence by the anti-civil defence marxist liar Angus Calder in his "People's War", where he promotes, hook-line-sinker the 1930s Marxist "Cambridge Scientists Anti-War Group" lies that bomb shelters and gas masks were just a propaganda ploy of no use whatsoever against bombs, ***a deception helped by the UK government's deliberate anti-democratic and anti-humanity decision for decades even after WWII - opposed bitterly by my father, Civil Defence Corps instructor John B. Cook - to keep shelter effectiveness data classified "Confidential" in Christopherson's report RC450, "Structural Defence 1945".***

11 May 2023 Russian state TV channel 1 loon openly threa...



But it's not just the UK government keeping the public ignorant of key facts to duplicate the Kremlin's propaganda machine, since President Carter said in his farewell address that nuclear weapons can only possibly be used in an all-out totally disarming war spread across a single afternoon, not a couple of nuclear bombs to escalate and end a long war as happened in Hiroshima and Nagasaki, August 1945. But was he a liar, just ignorant, both? How can "democracy" under such secrecy ever force the military to get real with overwhelming nuclear deterrence to end the slaughter of conventional wars, to stop classifying the truth top secret, when it is known to the enemy, and only the delusional mad Marx media and their fashion duped rivals like "Nukemap guy" (and those who believe him), remain faithful to bigoted nonsense. We'll examine in detail the blast and radiation shielding by concrete cities and their effect on reducing still further the utility of larger explosions, later below.

War was a certainty not an option alongside peace for Hitle...







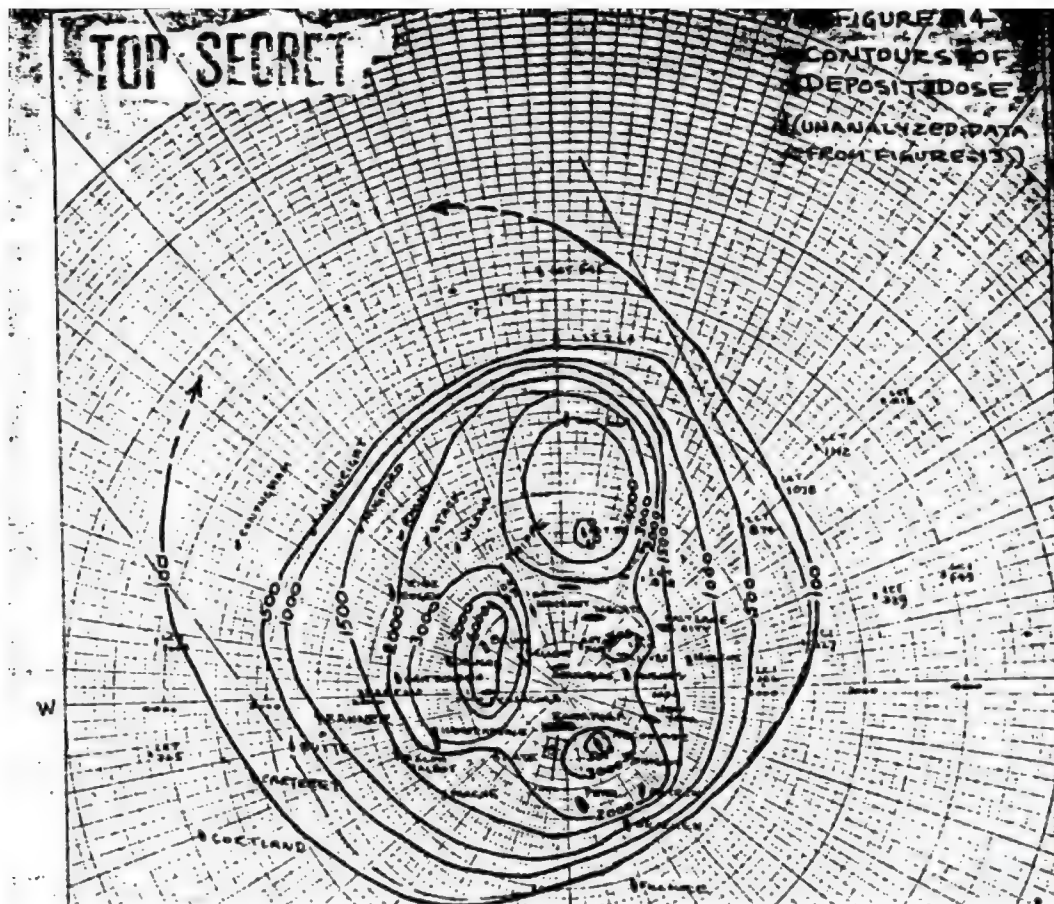












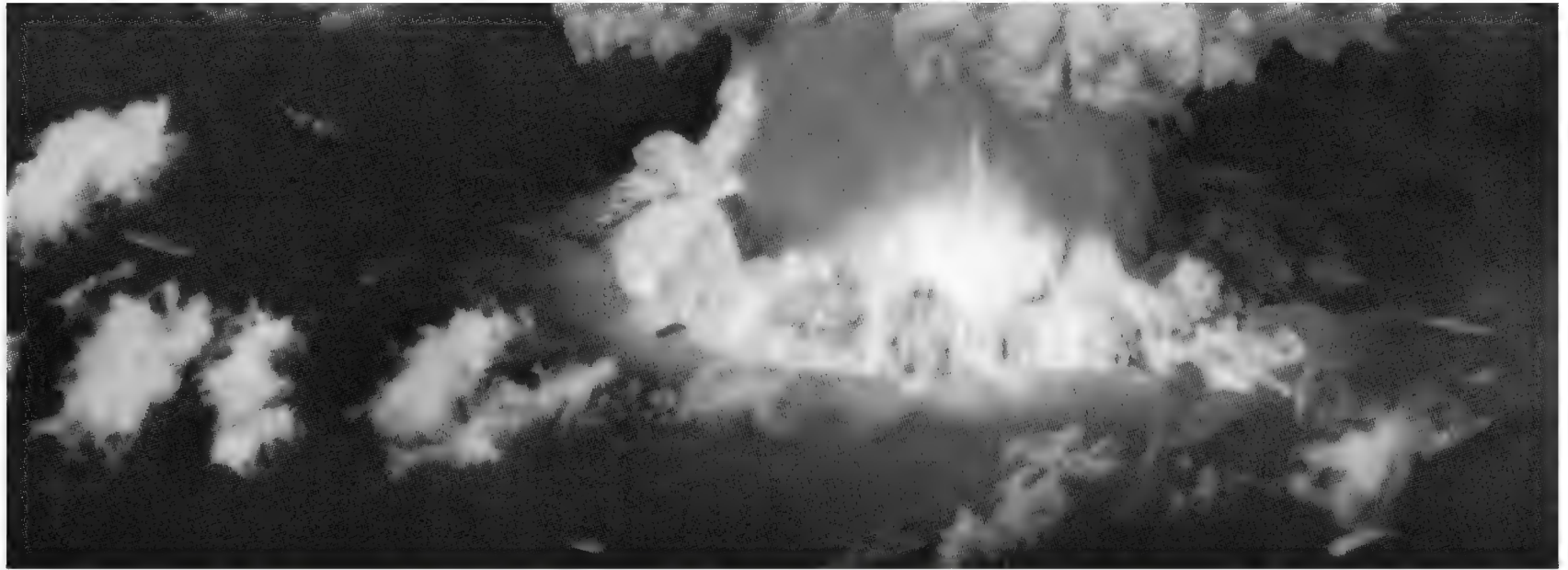
# INVESTIGATION OF GAMMA RADIATION HAZARDS INCIDENT TO UNDERWATER ATOMIC EXP

[illegible]

## Top Secret fallout from Baker shot (W Strobe)







ABOVE: years ago the Nevada NNSA very kindly and helpfully scanned in the originally "Top Secret" classified report by Walmer E. Strobe originally deriving the 25 July 1946 Crossroads-Baker fallout pattern which was later simplified and used in the fallout patterns compendium, DASA-1251 (Baker was 23 kt at a depth of 90 feet in 180 feet of water, within Bikini Lagoon). I put it on [Internet Archive for all to use](#). However, as with so many declassified reports, what you get is possibly a copy-of-a-copy of what is probably a microfiche print-out from a faded microfilm made about 70 years ago, so you can't see details clearly like the ship names. You can get around this with some effort, since other documents such as Shelton's *Reflections of a Nuclear Weaponeer*, gives maps of the ship arrays in Operation Crossroads. But there is a huge amount of time required to process all the data. Why isn't everything now freely available? What benefit is there to this sort of nonsense? The same secrecy nonsense applies to EMP data:









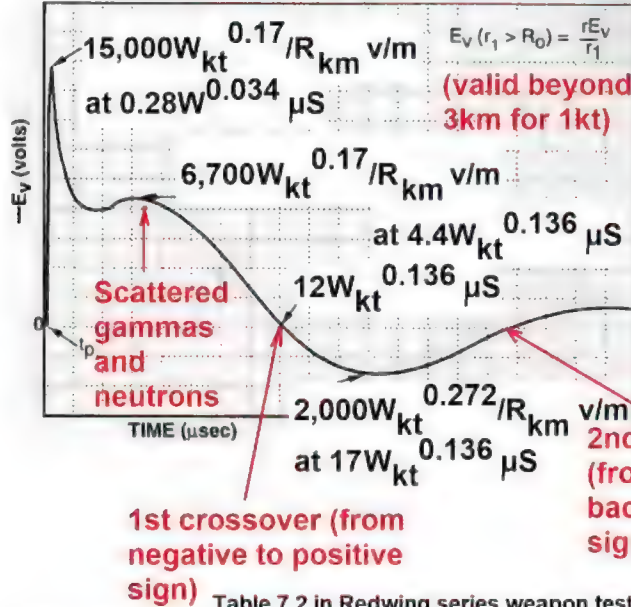
Russian nuclear test film



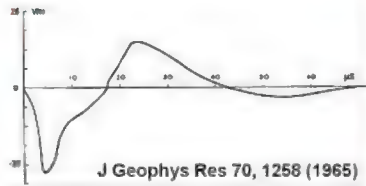
The Russians were the first to worry about EMP after it was piped into their instruments by 560km of cables at the 1949 RDS-1 nuclear test. The Russian nuclear weaponer **Kompaneets** was first to publish the nuclear EMP in unclassified literature, in "Radio emission from an atomic explosion", dated December 1958: [http://jetp.ras.ru/cgi-bin/dn/e\\_008\\_06\\_1076.pdf](http://jetp.ras.ru/cgi-bin/dn/e_008_06_1076.pdf). However, **RAND Corp's Gilinsky** debunked Kompaneets' peak field approximation in the 4 Jan 1965 *Physical Review* (v137, ppA50-A55). Russian nuclear tests were much **better funded for determining the effects and protective countermeasures than Western tests**. The full details of surface burst EMP have been declassified in **Northop's 1996 EM-1 summary book** and other American and British reports, but as with other effects of nuclear weapons, there is a HUGE amount of attenuation of the EMP by a modern high-rise steel and concrete city:



Figure 10.20. Generic Radiated Ground-Burst EMP Waveform. From J. A. Northrop 1996 EM-1



Eniwetok-Bikini 320 km



In a built-up city, steel framed and concrete buildings rapidly attenuate this EMP!

Left: at 320 km, the HF frequency peak of 0.3 μs has disappeared due to frequency dependent attenuation. The times to cross-over have also increased. At long distances, the times are extended by multipath distortion due the EMP being channelled from bomb to target by multiple reflections between the conductive ocean surface and the ionosphere, which act as a waveguide in the same way that you can pipe microwaves through a waveguide consisting of a hollow metal tube from source to antenna.

'The first burst] ra 1954, wh due to ci electron: produce the peric would be with yiel

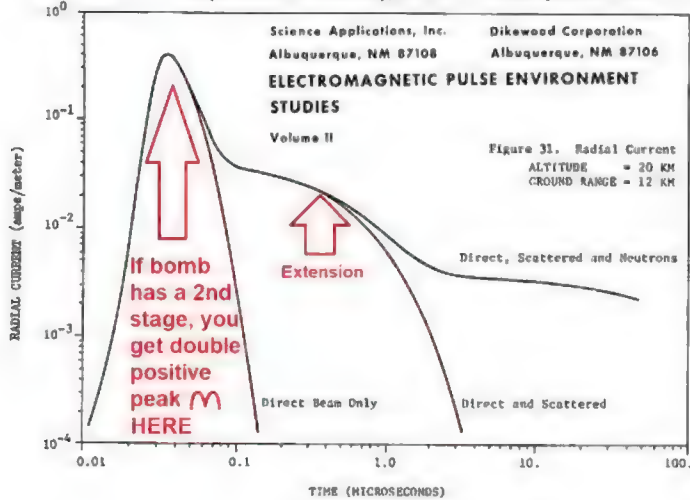
- J.B. Ta Atomic V report A' Confider

Fig 1b by from a ~ the Marc the peak km is ~2 a time of 17.2 mic microse zero is a negative 3.75 v/m

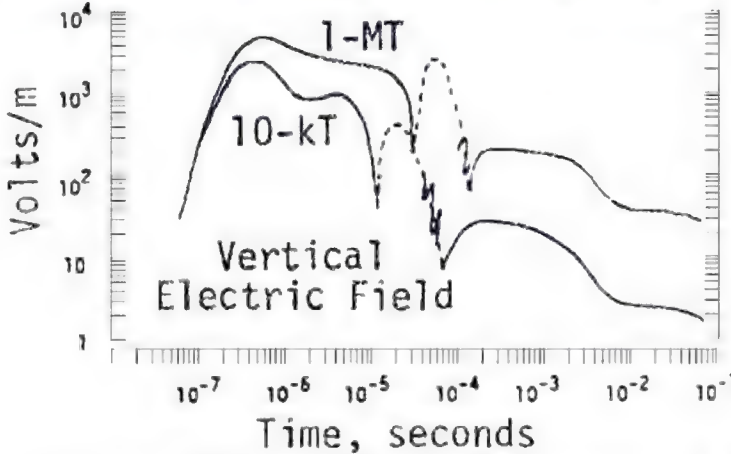
HENCE, FREQUE INCREA! FIRST FI FROM A OF TWE FREQUE TWENTY Hence fo close-in kHz at 30

AFWL-TR-73-286, Vol II

Table 7.2 in Redwing series weapon test report WT-1344 states that 2nd crossover occurred at 29 μs for 1.5kt Kickapoo (linear implosion Swallow), 50 for 1.9Mt Apache and 70 for 4.5Mt Navajo



Logarithmic plot of surface burst EMP waveforms: 10 km range from surface bursts (solid lines = negative fields; dashed lines = positive fields)



C. L. Longmire, "History and Physics of EMP," presentation at the Fourth NEM Symposium, Baltimore, Maryland, July 2, 1984.

# missiles and rockets

THE WEEKLY OF SPACE SYSTEMS ENGINEERING



## Scientists Call for Release of EMP Data

# missiles and rockets

THE WEEKLY OF SPACE SYSTEMS ENGINEERING

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## THE COVER

*Droplets of rapidly melting zirconium explode upon oxidation in tests that are part of a program probing effects of re-entry speeds and air densities in reducing material to tiny particles. Materials melting tests are being conducted at Cornell Aeronautical Lab.*



## SEPTEMBER 30 HEADLINES

Scientists Urge Declassification of EMP Data ..... 23

## Release of EMP Data

**Goldwater enters joint paper in Congressional Record exposing EMP damage in Las Vegas from 1951 near surface bursts due to cable coupling; test ban treaty debate; weapon systems**

by Heather M. Davis

TWO U.S. SCIENTISTS have called for a change in military specifications for missile systems and a hardening of existing strategic and tactical weapons to protect them against the electromagnetic effects of nuclear explosions (M/R, Sept. 16, p. 14; Sept. 23, p. 19).

Dr. John A. Kuypers of Stanford University and Dr. V. W. Vodicka, technical director of Joslyn Electronic Systems Division, called for a release of classified information on the electromagnetic pulse (EMP) effects on weapons, command and communication systems. Dr. Kuypers told MIS-SILES AND ROCKETS that some scientists have recognized the problem since the early nuclear tests were made, but security clamps were put upon these data.

Sen. Barry Goldwater (R-Ariz.) presented the views of the scientists

when he entered the draft of an unpublished paper written by the Congressional Record during the nuclear test-ban treaty debate.

The scientists said most significant data are available through unclassified technical journals from the USSR, France and from those U.S. scientists are not silenced by government secrecy. They added that there is no book which can be used by designers as an information source.

The authors charged that "the current Mil-Spec series is completely inadequate to meet the total requirements of communication weapons systems facilities." It did not recognize the real integrated problem, they said. When some effects are recognized, but a solution is not readily apparent, the problem is classified and withheld.

explosion of electrical conductors, equipment component burnout (especially solid state devices) and massive insulation failures, and ionization of dielectrics—can be expected in most military facilities that are combined with commercial facilities. From ground zero, they would be affected up to these radii: 1 MT fusion, low altitude, 20 miles; 10 MT, 72 miles; and 50 MT, 120 miles. Other scientists predict these effects may reach farther (M/R Sept. 9, p. 18).

Fusion effects listed by the scientists include: Argus effect—An aurora-like phenomenon noted in every high-altitude both U.S. and Soviet, which can be a man-made aurora equal to a corded solar flare storm.

Electromagnetic pulse effects—can affect buried cable in vicinity of aerial facilities. Conductor burnout in the immediate vicinity and high voltage passed down the line to remote electrical/electronic facilities occur from insulation breakdown.

ABOVE: still suppressed EMP data published by Senator Goldwater (64 Presidential nominee) in 19 September 1963 Senate Congressional Record exposing EMP damage in Las Vegas from 1951 near surface bursts due to cable coupling. Notice that even as late as 1977, the ill informed rubbish in the Glasstone Effects of nuclear weapons claimed that EMP has no effect outside the 2psi blast radius (roughly the deposition region radius with a few thousand v/m EMP field strength) in surface bursts, when in fact, very intense ~100,000 v/m EMP on the cables close to ground zero is simply piped out to enormous distances by conductors in microseconds (before air blast or ground shock can damage them!), so the limiting damage radius for EMP in such bursts depends on the resistance (ohms per metre) of the cables! It doesn't depend on the EMP field strength at the end of the cable where the damage occurs, any more than you have to have a power station on your doorstep to keep your lights on!



EMP in 19 September 1963 US Congressional Record SENATE

Report submitted by Senator Barry Goldwater durin

Mr. President, I ask unanimous consent that the first 7 pages of the introduction to a paper prepared by Dr. V. W. Vodicka, technical director, Joslyn Electronic Systems Division, and John A. Kuypers, of Stanford University, may be printed in the RECORD following my remarks.

There being no objection, the excerpt was ordered to be printed in the RECORD, as follows:

The immediate electromagnetic effects of an atomic explosion are massive and diverse. These effects can wipe out critical weapons and communications systems in a few seconds time although the same facilities may survive in the so-called conventional part of the attack environment.

There is more to a nuclear explosion than a spectacular visual display, ground and atmospheric shock waves, heat, and atomic radiation. These are only part of the nuclear attack environment.

Some of the electromagnetic effects (viz., Argus) are trans-hemispheric. All are re-

Nuclear electromagnetic effects have been noted since the advent of nuclear explosion testing. Overwhelming verification of their existence and scope has been built up by correlation of shot times (most accurately defined in foreign technical papers) with concurrent working system outages and damages. This correlation effort by the authors began in 1952 with notations of electromagnetic effects in the vicinity (200 mile radius) of the test grounds.

In August 1958 the Argus test series in the South Atlantic Ocean caused dramatic and unpredicted transhemispheric electromagnetic disturbances. A low-yield shot at 200 miles altitude caused the undersea coaxial cable across the North Atlantic Ocean to intermittently fail in function. Correlated outages existed in critical defense systems at this time but were not published due to classification of facilities logs.

Soviet instrumentation of our test efforts defined our shot times to the second. The times were published in unclassified technical papers.

Many tactical and strategic weapons, communications, and command systems are not hard electrically. These systems as now implemented may not survive electronically to the same degree that they will survive mechanically. Catastrophic electrical and electronic failures can be expected in most military facilities which are combined with commercial facilities as now installed to a radius from ground zero as follows if not properly protected:

	Miles
1 MT fusion, low altitude.....	20
10 MT fusion, low altitude.....	72
50 MT fusion, low altitude.....	120

The catastrophic failures are defined as: Vaporization and explosion of electrical conductors (power distribution and communications), equipment component burn out (especially solid state devices) and massive insulation failures due to both conductor overheating and electrical stress (over voltage) and ionization of dielectric.

Lesser systems failures can be expected outside of the radii specified above. Both calculations and actual experience show that

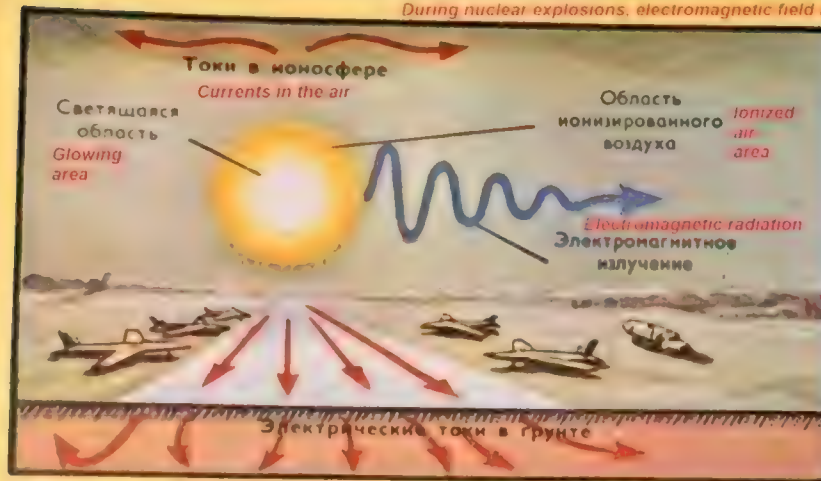
Early concern the gen feed lin ditions miles. been ob test act Instrum early to cause is neither instrum The eff ductors times is and du affects with ar standin ages, se are foll The res mediate down t other el

# ЭЛЕКТРОМАГНИТНЫЙ ИМПУЛЬС

Electromagnetic pulse

ПРИ ЯДЕРНЫХ ВЗРЫВАХ ВОЗНИКАЮТ ЭЛЕКТРОМАГНИТНЫЕ ПОЛЯ, КОТОРЫЕ СОЗДАЮТ ИМПУЛЬСНЫЕ ЭЛЕКТРИЧЕСКИЕ ТОКИ И НАПРЯЖЕНИЯ В НАЗЕМНЫХ ПРОВОДНЫХ И КАБЕЛЬНЫХ ЛИНИЯХ, В АНТЕННАХ РАДИОСТАНЦИЙ, А ТАКЖЕ РАДИОИЗЛУЧЕНИЕ, РАСПРОСТРАНЯЮЩЕЕСЯ НА БОЛЬШИЕ РАССТОЯНИЯ.

During nuclear explosions, electromagnetic field arise, which create pulsed electric currents and voltages on ground-based



Electromagnetic fields in the ground

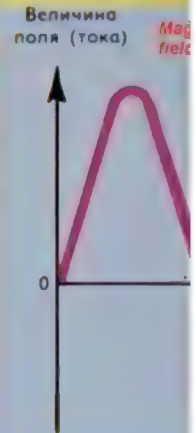
wire and cable lines, radio antennas, and radiated radio energy spreading far

Электромагнитное поле и токи в воздухе и грунте возникают в результате образования в зоне взрыва светящейся области и большой области ионизированного воздуха, созданной проникающей радиацией.

Electromagnetic fields and currents in the air and the ground, arise in the ionized air created by the penetrating radiation from the explosion.

Induced voltages and currents are in the form of a pulse, similar to lightning, with a duration of several milliseconds.

Наведенные токи и напряжения представляют собой кратковременный импульс, по своим характеристикам близкий к импульсу, вызванному молниевым разрядом. Его длительность составляет несколько миллисекунд.

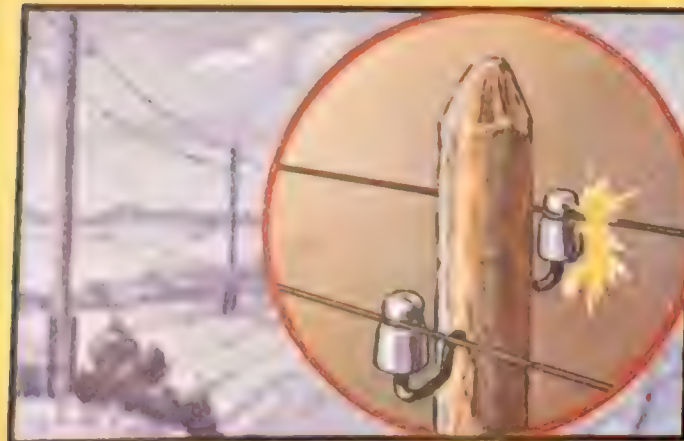


В радиусе нескольких километров от центра (эпицентра) взрыва перенапряжения между проводами воздушных линий и землей достигают десятков и сотен тысяч вольт. А между жилами подземных кабельных линий и оболочкой (землей) - нескольких десятков тысяч вольт. Наведенные импульсы могут распространяться по линиям на большие расстояния от места ядерного взрыва.

Underground cables receive several tens of thousands of volts induced pulse

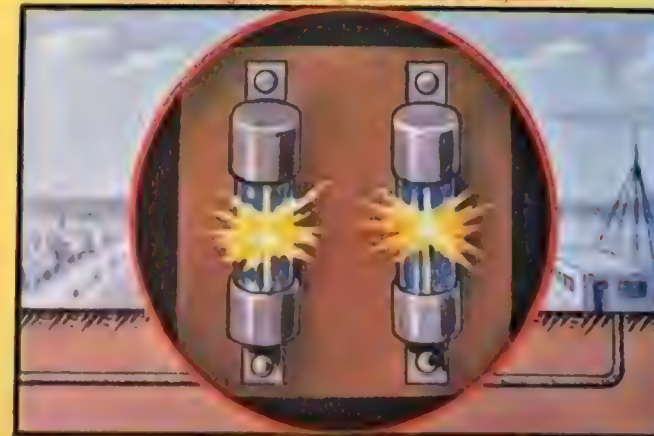
ВОЗНИКШИЕ ПРИ ВЗРЫВАХ ПЕРЕНАПРЯЖЕНИЯ СПОСОБНЫ:

Induced pulse propagate on



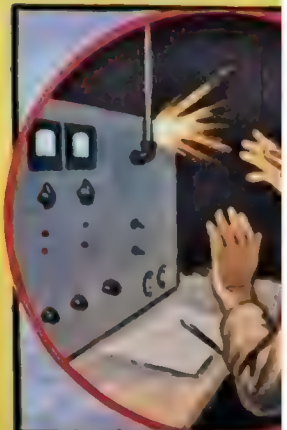
разрушать изоляцию электро- и радиотехнических устройств.

Destroying the insulation of electrical and radio equipment



вызывать перегорание элементов электро- и радио-аппаратуры или массовое срабатывание средств защиты.

Burning out electrical and radio equipment components/safety devices.



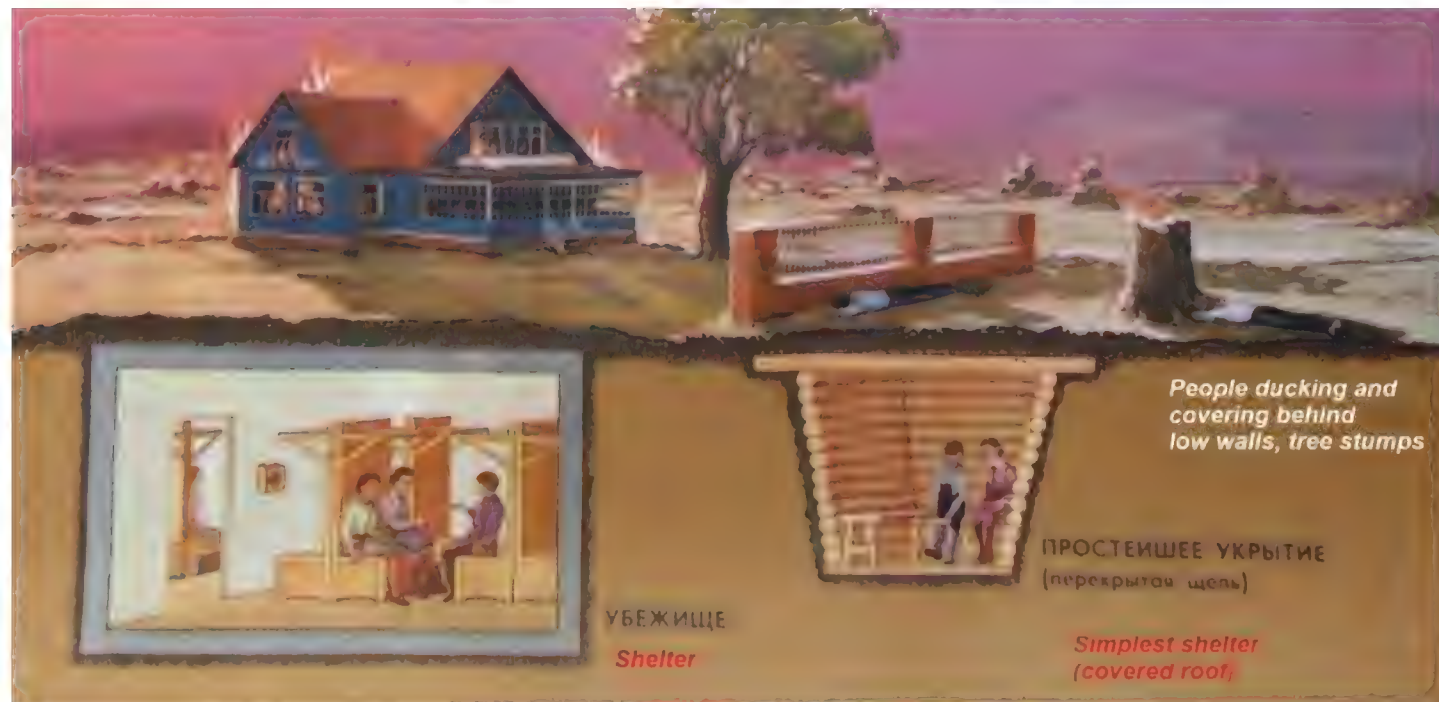
поражать человека

Injuring technical













# ПОРАЖАЮЩИЕ ФАКТОРЫ ЯДЕРНОГО ВЗРЫВА

## Damaging effects of a nuclear explosion

Ослабление интенсивности гамма-излучения характеризуется слоем половинного ослабления. Этим термином обозначается слой, в котором интенсивность гамма-лучей уменьшается в два раза.

**Penetrating radiation - neutrons and gamma rays, are emitted during a nuclear explosion**

Проникающая радиация — это поток гамма-лучей и нейтронов, испускаемых в момент ядерного взрыва.

Поражающее действие проникающей радиации на людей вызывается облучением, которое оказывает вредное биологическое действие на клетки организма, в результате чего человек заболевает так называемой лучевой болезнью.

В зависимости от дозы облучения (которая измеряется в рентгенах) различают три степени лучевой болезни: первую (легкую), вторую (среднюю) и третью (тяжелую).

При лучевой болезни первой степени скрытый период продолжается две-три недели, после чего появляется недомогание, общая слабость, тошнота, головокружение, повышается температура.

При лучевой болезни второй степени скрытый период длится около недели, признаки заболевания — как и при лучевой болезни первой степени, но в более ярко выраженной форме. При активном лечении выздоровление наступает через 1,5—2 месяца.

Скрытый период при лучевой болезни третьей степени сокращается до нескольких часов. Болезнь протекает более интенсивно. При активном лечении выздоровление наступает через несколько месяцев.

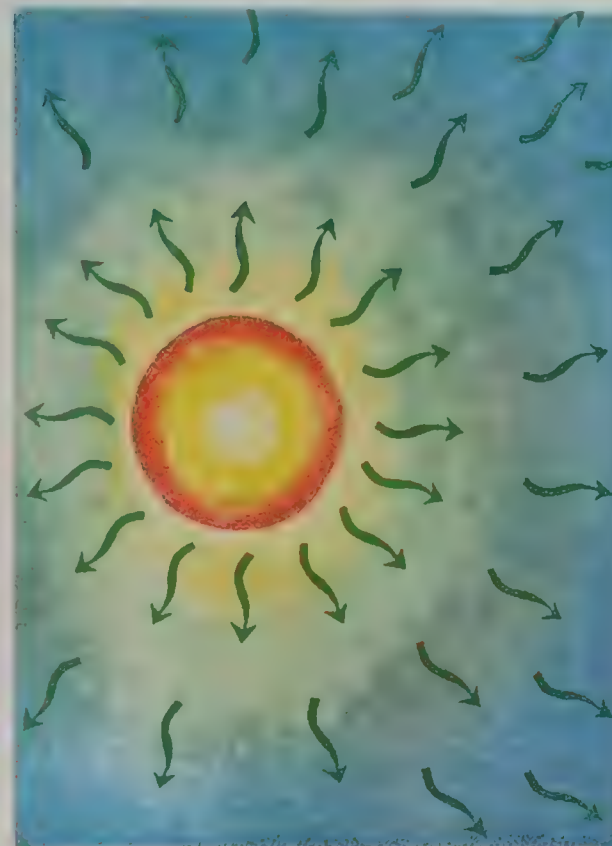
*The first symptom of a mild (1st degree) radiation dose is brief nausea and sickness, followed by a latent period of no symptoms lasting 2-3 weeks, then another period of malaise/discomfort including symptoms of fever [due to low blood counts of radiation-susceptible short-lived white blood cells of the immune system, blood clotting platelets, etc.]. For moderately severe (2nd degree) doses, the latent period of no effects is reduced to just 1 week, and recovery with treatment takes 1.5-2 months. For severe (3rd degree) radiation doses, the latent period is reduced to a few hours.*

ЕСЛИ ДОЗЫ ОБЛУЧЕНИЯ ПРЕВЫШАЮТ ДОПУСТИМЫЕ, ЧЕЛОВЕК ЗАБОЛЕВАЕТ ЛУЧЕВОЙ БОЛЕЗНЬЮ!

*If the radiation dose exceeds permissible limits, the person becomes ill with radiation sickness*

### СТЕПЕНИ ЛУЧЕВОЙ БОЛЕЗНИ

100-200 p — лучевая болезнь I степени



**Thicknesses of radiation by**

Свинец 2 см

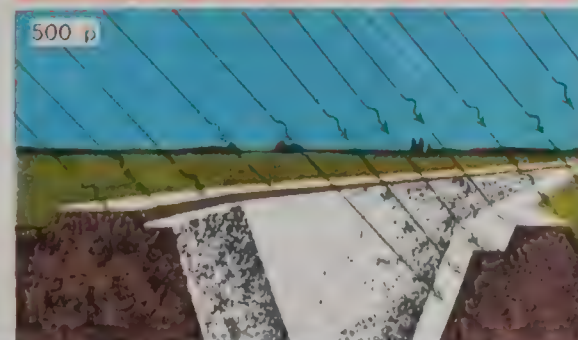
Броня 3 см

Бетон 10

Грунт (и

Слой половинного ослабления неко

За преградами доза радиации значительно меньше, чем на открытой местности. Убежища практически Behind barriers, radiation doses are much less. Shelters provide almost complete protection.

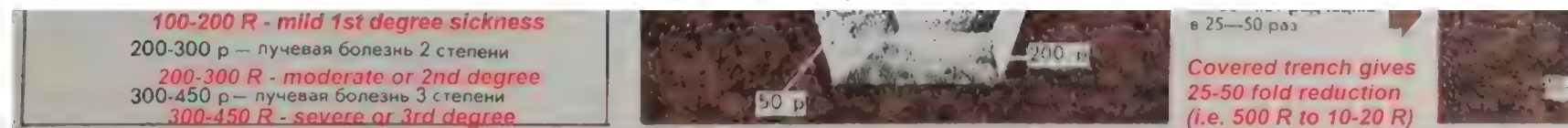


500 R reduced to 50-200R in open trench

Открытые щели ослабляют радиацию в 3—10 раз

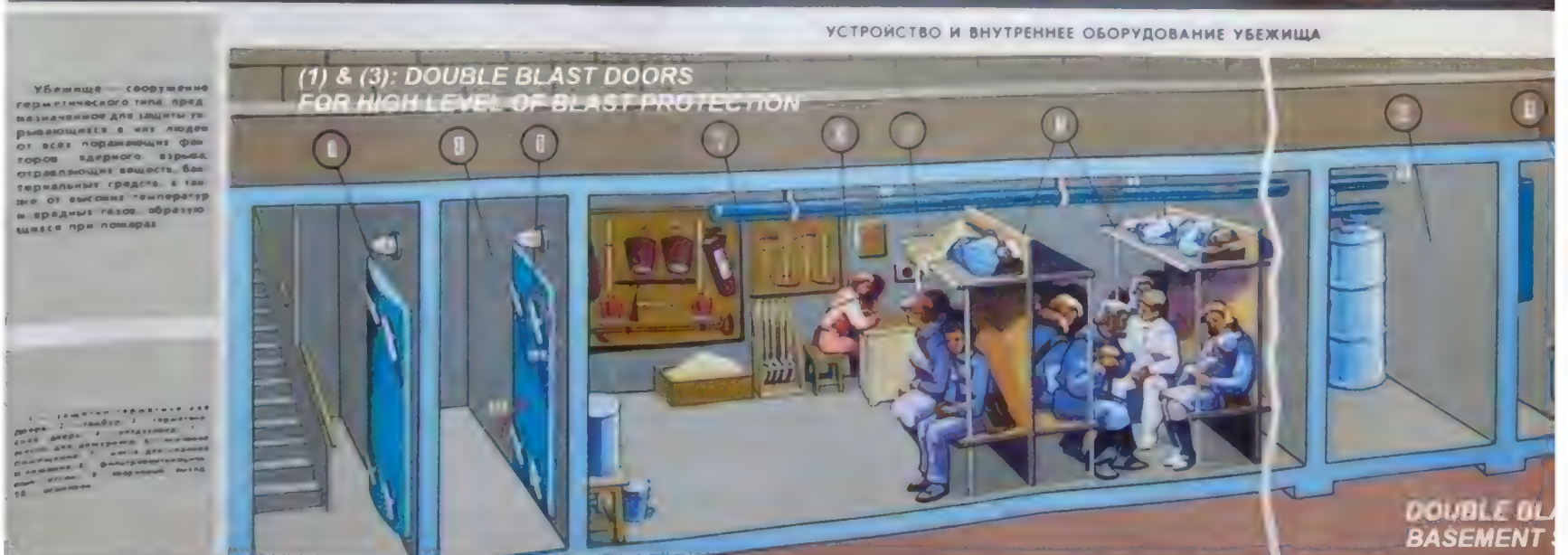
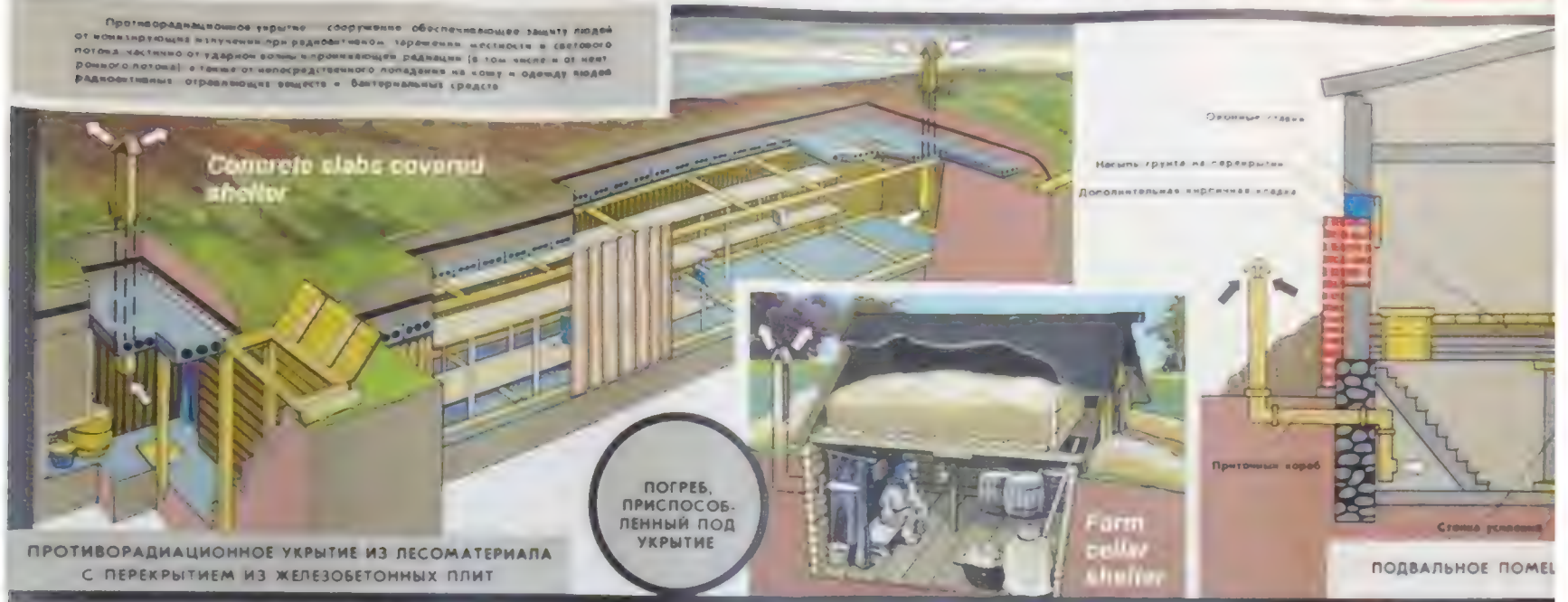
Open slit trenches give a 3-10 fold shielding of gamma radiation

Перекрытые щели ослабляют радиацию





# ЗАЩИТНЫЕ СООРУЖЕНИЯ ГО 1986-7 Rus: basement s

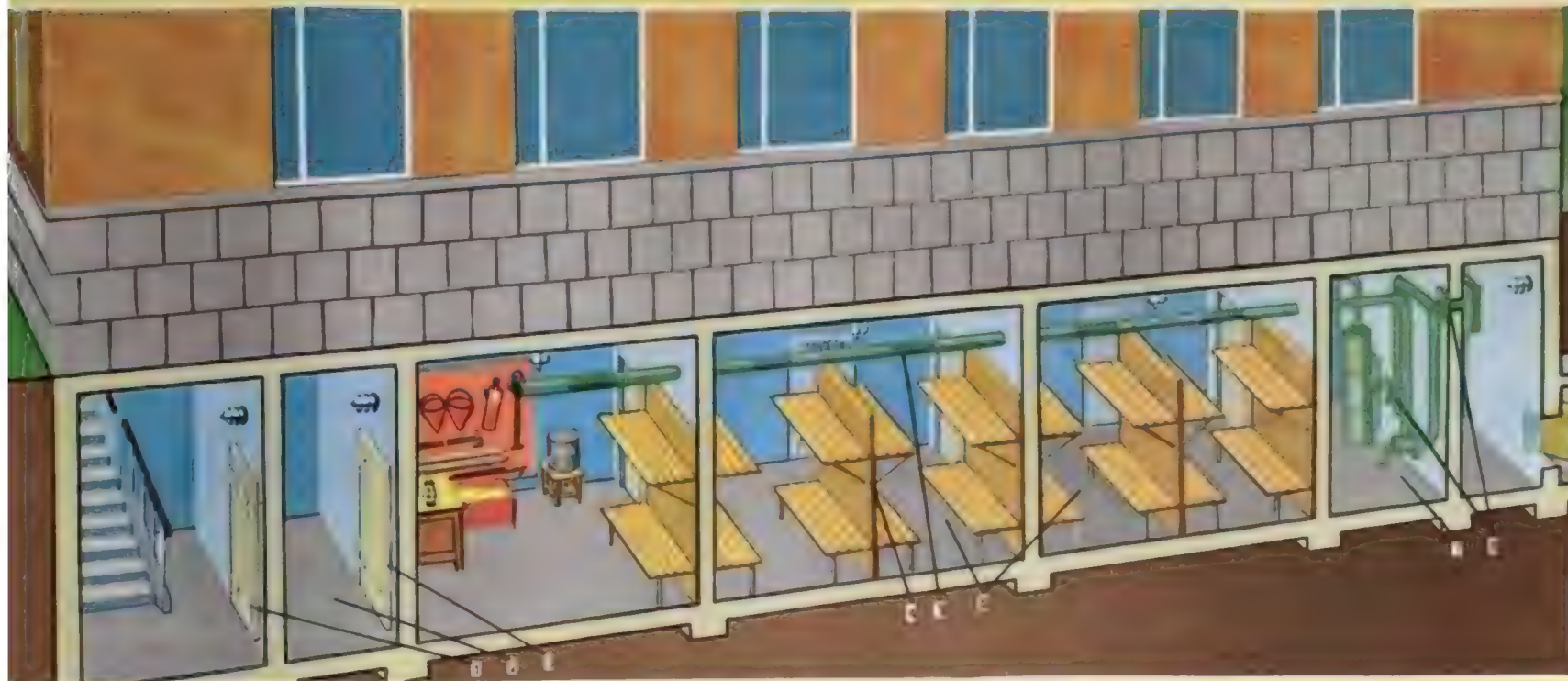




# ОБЩЕЕ УСТРОЙСТВО УБЕЖИЩ

УБЕЖИЩА ЗАЩИЩАЮТ ЛЮДЕЙ ОТ ВОЗДЕЙСТВИЯ ЯДЕРНОГО ОРУЖИЯ, ОТРАВЛЯЮЩИХ ВЕЩЕСТВ И БАНТЕРИАЛЬНЫХ СР.

## ВНУТРЕННЕЕ ОБОРУДОВАНИЕ ВСТРОЕННОГО УБЕЖИЩА



### DOUBLE BLAST DOORS FOR CLOSE-IN HIGH OVERPRESSURES

По сигналу «Воздушная тревога» в убежище (укрытие) сначала размещаются дети и престарелые люди;

индивидуальные средства защиты необходимо держать в постоянной готовности;

общий выход из убежища осуществляется по сигналу «Отбой воздушной тревоги» (без разрешения выходить из убежища запрещается);

Основные помещения строятся из расчета  $1,8 \text{ м}^3$  объема и  $0,5 \text{ м}^2$  площади на одного укрываемого человека

Высота помещений должна составлять не менее 2,2 м от пола до низа выступающих конструкций перекрытия.

Места для сидения устраиваются размером  $0,45 \times 0,45 \text{ м}$  на одного человека и для лежания на верхнем ярусе  $0,55 \times 1,8 \text{ м}$ . Количество мест для лежания должно быть не менее 20% от общей вместимости убежища.

В убежище в противоположных его концах устраивается не менее двух выходов.

Очистка подаваемого воздуха может осуществляться в двух режимах: чистой вентиляции (очистка воздуха от пыли), фильтровентиляции (очистка воздуха от пыли и ОБ).

### РАЗМЕЩЕНИЕ ЛЮДЕЙ















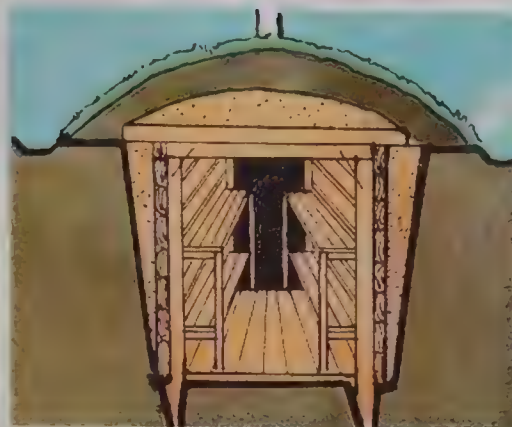
# ПРОТИВОРАДИАЦИОННЫЕ УКРЫТИЯ

(ПРОДОЛЖЕНИЕ)

Население при угрозе нападения противника может своими силами строить из подручных рода укрытия.



Щель

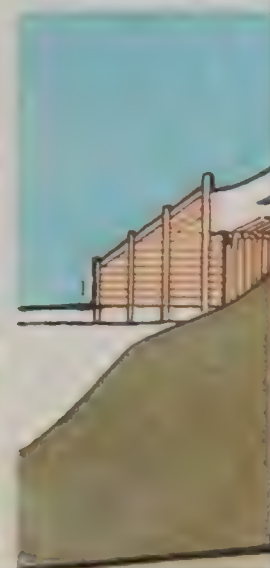
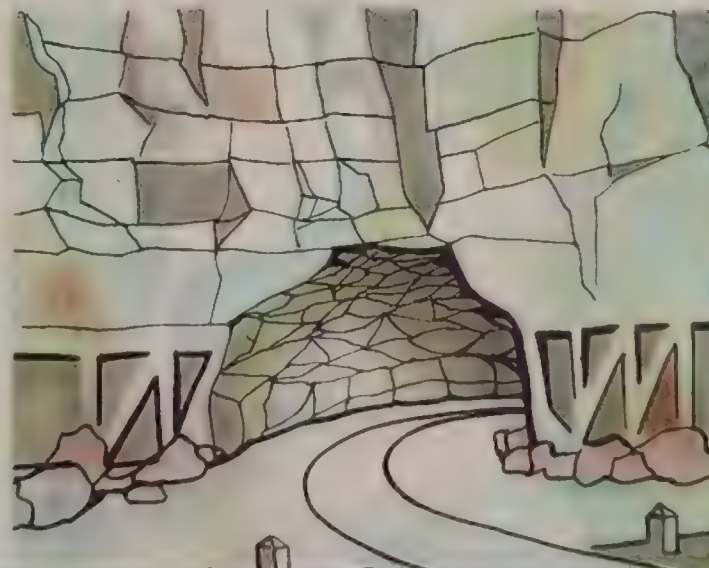


Землянка



Укрытие из арочных fascines

В районах горнодобывающей и угольной промышленности под укрытия могут быть использованы выработки по добыче строительных материалов, катакомбы, пещеры и др.







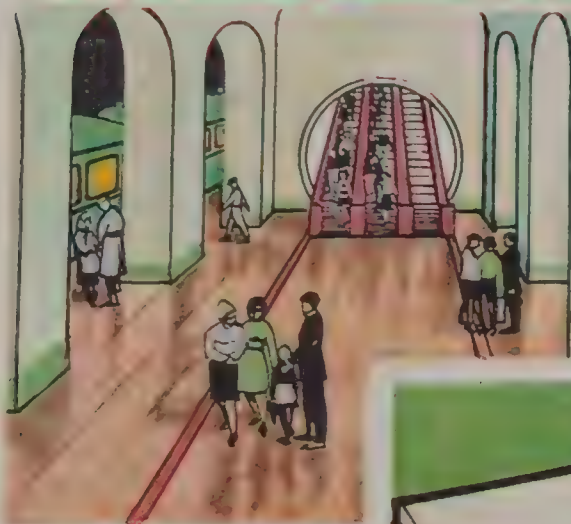
# УБЕЖИЩА, ПОСТРОЕННЫЕ С УЧЕТОМ ИХ ИСПОЛЬЗОВАНИЯ В МИР ДЛЯ НУЖД НАРОДНОГО ХОЗЯЙСТВА

SHELTERS BUILT  
IN PEACETIME FOR  
ECONOMY

К убежищам предъявляются специальные требования: надежность защитных устройств и внутренняя возможность самостоятельного выхода людей после ядерного взрыва, использование в мирное время хозяйства.

Подземные гаражи, предприятия общественного питания, склады, шахты и горные выработки обильно и имеют необходимое оборудование. В военное время они могут быть быстро подготовлены для

*Shelters must have reliable protection and equipment and an escape exit for emergencies where the entrance is blocked, and peacetime uses for eating, catering establishments, warehouses, mines and mine workings are highly durable and have the necessary equipment. In wartime, they can be quickly*



Метрополитены обладают высокими защитными свойствами и являются наиболее современным коллективным средством защиты людей от оружия массового поражения.

*Dual use underground large capacity car park/garage, with equipment to allow immediate conversion into a shelter*

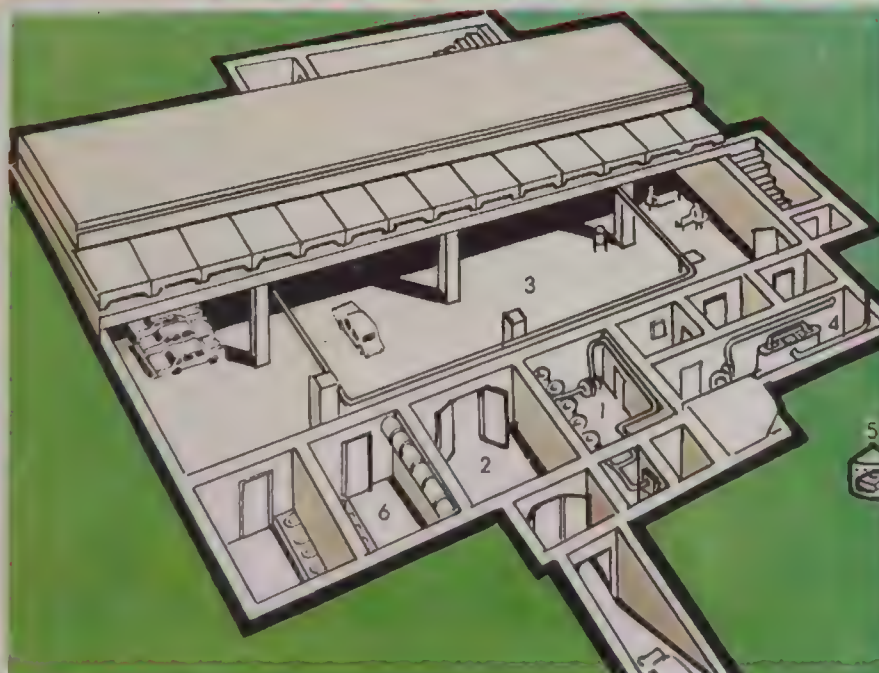
Отдельно стоящее убежище — гараж большой вместимости:

1 — помещение фильтровентиляционного оборудования; 2 — тамбур-шлюз с защитно-герметическими дверями (воротами); 3 — помещение для укрываемых; 4 — помещение для электрогенераторов с дизельными

## КОЭФФИЦИЕНТ ОСЛАБЛЕНИЯ ИЗЛУЧЕНИЯ:

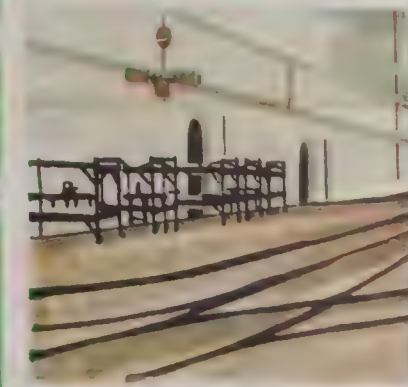
Каменное одноэтажное строение	10—13 раз
Подвал каменного одноэтажного строения	40—60 »
Каменное двухэтажное строение	15—20 »
Подвал каменного двухэтажного строения	100—130 »
Каменное трехэтажное строение	20—33 раза
Подвал каменного трехэтажного строения	400—600 раз
Перекрытые щели	40—50 »
Противорадиационные укрытия и убежища	400—1000 »
Пассажирские вагоны	3 раза
Грузовые вагоны	2 »
Кабины бульдозеров, кранов	4 »

Шахты, горные выработки — облучение практически исключено  
*Radiation protection factors: 1-story house 10-13;  
 basement of 1-story house 40-60; 2-story house 15-20;  
 basement of 2-story house 100-130; ... shelters 400-1000*



Убежище, построенное с учетом использования в мирное время

*Dual use underground basement cafeteria in peacetime*











В местах с неустойчивыми грунтами укрытия строятся с одеждой крутостей (откосы котлованов укрепляются блоками). Десять человек могут построить для себя такое укрытие за 19 часов. Для этого необходимо иметь 1500 шт. блоков, 9 м<sup>3</sup> глиняного раствора и несколько досок для устройства входа и вентиляционного короба.

*Translation: this shelter for places with unstable soil was made by the occupants in 19 hours, using 9 cubic metres of clay in 1500 blocks.*



*Extract from 1972 Russian nuclear shelters poster "Anti-radiation shelters made of Adobe blocks" giving several fallout gamma radiation protection factor of 400-700, using adobe/clay blocks.*



## ФИЛЬТРУЮЩИЕ ПРОТИВОГАЗЫ

ОБЕСПЕЧИВАЮТ ЗАЩИТУ ОТ ПОПАДАНИЯ В ОРГАНЫ ДЫХАНИЯ, ГЛАЗА И НА ЛИЦО РАДИОАКТИВНЫХ, ОТРАВЛЯЮЩИХ ВЕЩЕСТВ И БАКТЕРИАЛЬНЫХ (БИОЛОГИЧЕСКИХ) СРЕДСТВ

ОБЩЕВОЙСКОВОЙ  
ПРОТИВОГАЗ

ПРОТИВОГАЗЫ  
для взрослых

ГП-5

ГП-4у

ПДФ-Ш

ДЕТСКИЕ  
ПРОТИВОГАЗЫ

ПДФ-7

ДП-6

1986  
mask



A-6 HONOLULU ADVERTISER Tuesday, July 10, 1962

# N-Blast Turns Darkness



Advertiser Photos By

Thermonuclear blast 800 miles away lights city. Bright core of blast is visible above Ala Moana Bldg.



Sunday, November 3, 1963

THE BATTLE CREEK ENQUIRER AND NEWS

# Atomic Retaliation Jeopardized

Electromagnetic Pulse Effects Revealed Publicly First by Reserve  
Generals Goldwater, Thurmond in Fight on Test-Ban Treaty

*This country has a highly elaborate system of electronic communications to make sure that retaliation to a foreign attack is both massive and immediate. Now evidence is strong that the whole system could go haywire with the explosion of a single high-altitude bomb.*

By WATSON DAVIS

WASHINGTON—The entire nuclear defense of the United States is in jeopardy because of an atomic bomb effect which has so far been kept under strict secrecy.

Realization has grown that the explosion of an atomic bomb, either the old-fashioned fission kind or the hydrogen or nuclear fusion sort, sets up extremely high and powerful radiation of an electrical nature.

The electromagnetic pulse, EMP, as it is called, has the effect of putting out of commission the ordinary electrical control systems that must be relied on to launch and guide our missiles that would carry retaliatory atomic warheads to the enemy which makes an atomic attack on the nation.

The explosion of an enemy bomb within even a few hundred miles of one of our atomic missiles ready to be launched would put it out of commission unless the control and launching mechanisms are redesigned to withstand these effects. It is not necessary for the enemy bomb to make a direct hit.

THESE EMP EFFECTS were demonstrated vividly during the high altitude tests of 1958 in the South Atlantic and 1962 in the South Pacific.

The EMP phenomenon had been observed from the very

beginning of atomic testing in 1945. But the magnitude of the effects and their seriousness has been realized most vividly in the last decade.

The United States is pledged not to launch atomic bombs first. But it would utilize its gigantic nuclear strength in retaliation for an atomic strike at our country or our allies. The disabling effects of EMP created by bombs fired at us are of extreme seriousness.

In effect, a thermonuclear hydrogen fusion bomb of 50 megatons, a size that can be expected in actual warfare, would virtually wipe out catastrophically the electrical and electronic systems within a radius of 120 miles of where it strikes.

Even outside this area there would be many damaging effects. Smaller bombs would have smaller areas of complete disaster but their effects, too, would be very extensive.

THE SCIENTISTS AND the military charged with our atomic defense and attack are

most concerned about the effect of EMP upon the electrical circuitry that will control in launching and in flight and the electronic trigger mechanism of our Minuteman missiles as well as the Titan and Atlas missiles, all of which are land based.

Less vulnerable would be the submarine-launched Polaris missiles which are on the alert in relatively large numbers under the sea.

There is research under way, under pressure, to counter the effects of EMP by what is called "hardening." This involves redesigning all of the modern circuitry including antennas, the electronic triggers that set off the bombs, circuits in inertial guidance systems, and the long lines of communication from control centers which would give the orders to put the retaliatory firing of nuclear missiles in action.

IRONICALLY, information about EMP has been kept under such security wraps that the first detailed information has come to the public through revelations made by two reserve major generals, one in the Air Force and one in the Army, who are U.S. Senators. During the test ban treaty debate in the Senate, Senators Barry Goldwater (R-Ariz.) and Strom Thurmond (D-S.C.), both of whom opposed the ratification of the treaty, put into the proceedings of Congress to support their stand technical data, which previously had not been available (Congressional Record, Sept. 19).

Sen. Goldwater introduced into the Record a paper prepared by Dr. V. W. Vodicak, technical director of Joslyn Electronic Systems Division, and Dr. John A. Kuypers of Stanford University.

THE EXPLOSION of an atomic bomb causes a gigantic electrical surge of extremely high voltage although of short duration. Even the early old-fashioned fission bombs of relatively small size caused increases in voltages on power lines in the region where they were exploded. Circuit breakers on main feed lines were tripped due to the excessive voltage and this effect was felt in areas more

that is known generally comes from foreign unclassified sources such as technical magazines and reports. The Vodicak-Kuypers report says that "our systems design and implementation remains in the horse and buggy stage with respect to nuclear electromagnetic effects."

Besides the EMP effect the nuclear explosions cause other electromagnetic disturbances. In every high altitude test, by both Americans and Russians since 1953, artificial auroras have been produced. This is the so-called Argus effect because it was most prominently recognized in the U.S. Argus test series in the South Atlantic in August 1958. An atomic bomb can create a man-made aurora at any desired location that is equal to the electrical disturbance of any recorded sunspot storm.

This aurora causes severe electrical disturbances that affect radio and cable communications more severely than sunspots. In 1958 a low-yield shot at only a 200-mile altitude in the South Atlantic caused the undersea coaxial cable across the North Atlantic, thousands of miles away, to fail to function from time to time.

OTHER NUCLEAR blast effects, electrical in their nature, are:

1—Bursts of neutrons, which like the EMP cause abnormal voltages in electrical wires, and result in insulation breakdowns due to heat, chemical change and other effects.

2—A sort of artificial lightning, a static discharge effect, which particularly damages radio antennas and other metal of the electrical systems above ground. Some of these effects are sufficient to melt the structural compounds and cause a collapse of the antenna.

3—Radio transmission is affected seriously, particularly in the low-frequency and ultralow-frequency ranges of radio communication.

4—Great bursts of gamma rays or x-rays are produced by a nuclear explosion. The effects of these are very serious and some information suggests that the atomic bomb blast will melt the plutonium and fusible light element compounds that

## Can EMP Neutralize SAGE

By STAN KAUFMAN

Increased concern over the effect of electromagnetic pulse (EMP) on the electronic and electrical systems used in launch and guidance procedure of the U.S.'s retaliatory missiles also spotlights the air defense network of the nation. For this is a highly-sophisticated electronic and electrical net subject to tampering.

"Could SAGE installations such as that of the Detroit Air Defense at Custer Air Force Station be rendered useless by a nuclear air burst?"

If the effect of EMP proves a devastating as some Joslyn authorities claim, the entire system could be neutralized by an offensive assault. It would not need to be destructive on the ground to be electronically paralyzing.

The local SAGE facility is responsible for the air defense of a highly industrialized section of the Midwest encompassing some 220,000-square miles of real estate and 22 million inhabitants. To provide data for the destruction of incoming enemy aircraft, high speed computations are made on electronic equipment in the "blockhouse" at Custer.

If information made public on EMP by the two U.S. senators who opposed the test ban treaty can be taken as "gospel," there can be no doubt

that the circuitry and communications utilized in SAGE also would be so affected as to make the system inoperative on an automatic basis.

But any claim that our missiles in silos would be deactivated by EMP has been described by Secretary of Defense Robert S. McNamara as "pure fantasy."

IN A QUERY to local SAGE officials, the Enquirer and News was given the copy of a reply that was made by Sec. McNamara in September, but the reply did not present any definite answer as to what effect EMP would have on SAGE.

McNamara stated: "It is pure fantasy . . . fiction. There is no possibility that a Soviet bomb, no matter how large, could under today's conditions, in any way, kill or prevent from functioning effectively our nuclear weapons."

Not satisfied with this state reply, the Enquirer and News again queried the Air Force and North American Air Defense Command at Colorado Springs came up with a more positive statement. But before it can be made available to the newspaper, it must be cleared by the Pentagon in Washington.

Some unofficial AF comments implied that there would be no interference on the SAGE system from a nuclear test. But there was no definite reassurance.

Gen. Thomas C. Power, com-

mander of the Strategic Command, expressed fear if EMP wiped out the U.S. electronic surveillance and guidance system, we would have no p to retaliate. (His testimony fore the Senate on the test treaty was highly censored for made public.)

One effect of EMP's ener described as a quality v erases data stored on mag tapes or drums, which an heart of the SAGE system This information is ana and relayed to jet interco weapon systems and grou air nuclear-tipped missa poised to destroy invading t er forces.

A burst of electromag

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than 80 miles from where the bomb was exploded.

Most of the instrumentation failures that plagued early bomb tests were due to this effect. The effect cannot be avoided by covering cables with earth because buried cables suffer along with antenna and other electrical devices exposed above ground. Insulation is destroyed by the excessive voltages of EMP and the excessive strength of the electrical current that run along the conductors to distant terminals and puts them out of action.

Research of the highest priority today in connection with defense activities includes the re-design of our existing electrical and electronic systems, including radar, to avoid the danger of their being put out of action by the EMP effects of enemy atomic attack.

Those working on our scientific research have been hampered by lack of information on the EMP and associated atomic effects, although there has been distributed, with a secret classification, studies and information which are not yet available to the general public.

• • •

**MOST OF THE** information

comprise the warheads of the nuclear bombs which we rely on to fling in retaliation to an attack upon this country.

• • •

**EXPERTS ARE** concerned that there are no reliable data compilations, such as a handbook, that can be used by the thousands of engineers and scientists who are working on our communications and weapons systems which must be re-designed and "hardened" in order to take care of the EMP and other nuclear explosion effects.

The electrical effects of atomic explosion which are now causing great concern are additional to the radiation, blast and extreme heat which would be produced by gigantic H-bomb explosions. These effects are better known and have been better publicized in connection with civilian defense than the electrical effects. But they are fundamentally no more serious from the standpoint of our counter measures and the defense of the country.

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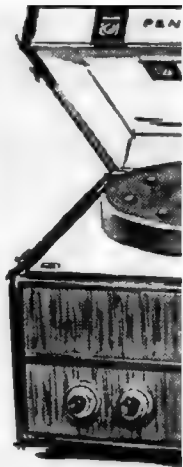
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2-F Sunday, Nov. 3, 1963 THE SHREVEPORT TIMES  
REVEALED DURING SENATE DEBATE

# A-Retaliatio n Jeopardized By Electromagnetic Pulse

By WATSON DAVIS  
Director, Science Service

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Realization has grown that the explosion of an atomic bomb, either the old-fashioned fission kind or the hydrogen or nuclear fusion sort, sets up extremely high and powerful radiation of an electrical nature.

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## OBSERVED FROM BEGINNING

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## RADIOS AFFECTED

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The present system of punctuation as a means of dividing written language into sections by various symbols was developed, with subsequent variations, from a system employed by an Italian scholar and printer, Aldus Manutius, in the late 15th and early 16th centuries.

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completely wipe out catastrophically the electrical and electronic systems within a radius of 120 miles of where it strikes.

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#### RESEARCH LAUNCHED

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#### INFORMATION LACKING

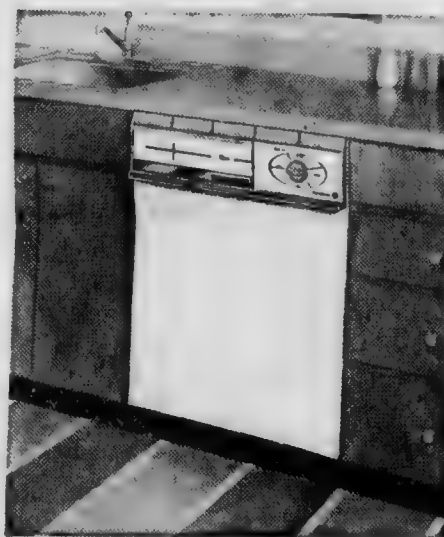
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THE RECORD, TUESDAY, NOVEMBER 5, 1963

# Electromagnetic Pulse Imperils Nuclear-Attack Defense Of U.S.

## Atomic-Bomb Effect Nullifies Systems For Launching Hit-Back Missiles

By WATSON DAVIS

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The explosion of an enemy bomb within even a few hundred miles of one of our atomic missiles ready to be launched would put it out of commission unless the control and launching mechanisms are redesigned to withstand these effects. It is

## A. E. C. Shuts Off Historic Reactor

Oak Ridge, Tenn. (W) — The Atomic Energy Commission shut down its oldest operating atomic reactor yesterday

not necessary for the enemy bomb to make a direct hit.

These E. M. P. effects were demonstrated vividly during the high-altitude tests of 1958 in the South Atlantic and 1962 in the South Pacific.

The E. M. P. phenomenon had been observed from the very beginning of atomic testing in 1945. But the magnitude of the effects and their seriousness have been realized most vividly in the last decade.

The United States is pledged not to launch atomic bombs first. But it would utilize its gigantic nuclear strength in retaliation for an atomic strike at our country or our allies. The disabling effects of E. M. P. created by bombs fired at us are of extreme seriousness. In effect, a thermonuclear hydrogen fusion bomb of 50 megatons, a size that can be expected in actual warfare, would virtually wipe out catastrophically the electrical and electronic systems within a radius of 120 miles of where it strikes.

Even outside this area there would be many damaging effects. Smaller bombs would

redesigning all of the modern circuitry including antennas, the electronic triggers that set off the bombs, circuits in inertial-guidance systems, and the long lines of communication from control centers which would give the orders to put the retaliatory firing of nuclear missiles in action.

## SENATORS CITE PERIL

Ironically, information about E. M. P. has been kept under such security wraps that the first detailed information has come to the public through revelations made by two reserve major generals, one in the Air Force and one in the Army, who are U. S. Senators. During the test-ban treaty debate in the Senate, Senators Barry Goldwater (R., Ariz.) and Strom Thurmond (D., S. C.), both of whom opposed the ratification of the treaty, put into the proceedings of Congress to support their stand technical data which previously had not been available.

Senator Goldwater introduced into the Congressional Record a paper prepared by Dr. V. W. Vodicak, technical director of Joslyn Electronic Systems Division, and Dr. John A. Kuyper of Stanford University.

The explosion of an atomic bomb causes a gigantic electrical surge of extremely high voltage although of short duration. Even the early old-fashioned fission bombs of relatively small size caused increases in voltages on power lines in the

atomic reactor yesterday.

At 2:13 P. M., the reactor, or nuclear furnace, ceased operation — 20 years, 11 hours and 13 minutes after it began functioning.

Dr. Richard Doan, one of the pioneers in the nation's atomic energy program, pushed a button that signaled the end of the graphite reactor's controlled reaction. A. E. C. Chairman G. T. Seaborg and a host of dignitaries looked on.

Doan was the first research director at Oak Ridge National Laboratory and was one of the little band of scientists and engineers present at 5 A. M., Nov. 4, 1943, when the reactor began operating.

The graphite reactor served as a pilot plant for the production of plutonium during World War II.

have smaller areas of complete disaster but their effects, too, would be very extensive.

#### **POLARIS LESS VULNERABLE**

The scientists and the military charged with our atomic defense and attack are most concerned about the effect of E. M. P. upon the electrical circuitry that will control in launching and in flight and the electronic trigger mechanism of our Minuteman missiles as well as the Titan and Atlas missiles, all of which are land based.

Less vulnerable would be the submarine-launched Polaris missiles which are on the alert in relatively large numbers under the sea.

There is research under way, under pressure, to counter the effects of E. M. P. by what is called hardening. This involves

region where they were exploded. Circuit breakers on main feed lines were tripped due to the excessive voltage and this effect was felt in areas more than 80 miles from where the bomb was exploded.

#### **REDESIGN RESEARCH**

Most of the instrumentation failures that plagued early bomb tests were due to this effect. The effect cannot be avoided by covering cables with earth because buried cables suffer along with antenna and other electrical devices exposed above ground. Insulation is destroyed by the excessive voltages of E. M. P. and the excessive strength of the electrical current that run along the conductors to distant terminals and puts them out of action.

Research of the highest priori-

A-2 HONOLULU ADVERTISER Monday, July 9, 1962

TIDE: High 11:02 a.m., 9:26 p.m. Low 4:01 a.m., 4:08 p.m.

# Blast Lights Isles

Continued from Page 1

## Lights Go Out As Bomb Blasts

The street lights on Ferdinand St. in Manoa and Kawaiui St. in Kailua went out at the instant the bomb went off, according to several persons who called police last night.

Repairmen were sent to investigate.

Police were sent to a South St. warehouse when a burglar alarm started ringing at the time of the blast.

### THE HONOLULU ADVERTISER

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THE KINGSTON WHIG STANDARD — WEDNESDAY SEPTEMBER 24, 1958

PA

# Kremlin Builds Shelter In Volga River Reg

BONN (NANA) — A nuclear war command post has been constructed for the Kremlin's top leadership 450 miles east of Moscow near the Volga river according to Bonn government intelligence officials.

The Kremlin's nuclear shelter is described as a rough approximation of that constructed for U.S. government leaders in the Maryland mountains.

Situated in the centre of a prohibited area 12 miles in circumference, the Kremlin shelter reportedly is sunk 120 feet in the earth and has space for 200 persons.

It is claimed that the Kremlin's underground "fortress," if cut off from outside assistance could hold out for six months entirely on its own resources.

Construction is said to have begun in 1954. Reportedly in charge of the project were professors Iuri Makasarov, who recently was named chairman of the Soviet State Commission for

Science and Technology, and Michael Lavrenty, an automation expert.

Reports say the bunker is an automation showcase—a so-called "robot city" designed to free its occupants of all housekeeping tasks.

More than half of the bunker's space is said to be filled with communications and other technical equipment designed to permit the Kremlin's leaders to exercise command of a nuclear war through remote control.

There reportedly are conference rooms, a dining chamber, a library and a hospital. The largest single chamber is said to be a 600-foot-long hall designed as a communal living quarter.

The shelter's security bloc was cleared of its normal civilian population prior to the beginning of construction, the intelligence sources say.

The peasants moved out of the area security area, they add, have either been replaced by secret police and troops who, wearing civilian

# NO FO

# Red Ships Spy on Pacific Nuclear

WASHINGTON, May 25 (UPI)—Three Russian ships loaded with electronic gear are spying in the U.S. nuclear test area of the Pacific and are gathering valuable military information the Defense Department said today.

But a Pentagon spokesman said the vessels are outside the restricted zone surrounding Christmas Island, and are within their rights.

No action is planned except to warn them of possible danger from the explo-

sions, he said.

The ships are only 10 to 15 miles outside the restricted area about 400 miles west of Christmas Island, he said, and have ignored efforts by American vessels to warn them of danger.

Recalling that the Russians complained of fallout danger to one of its vessels in the 1958 Pacific tests, the spokesman said they apparently are not concerned about such danger now.

The largest of the Russian vessels was identified as the

3,600-ton hydro-meteorological ship Shokalsky. It was said to have a great variety of electronic devices, 16 laboratories and a pad for launching rockets capable of reaching ionosphere.

It is accompanied by two smaller ships which are converted trawlers equipped to obtain auxiliary electronic data.

The Pentagon spokesman said the ships can obtain information on weapons design through "radio-chemical" analysis. They can

measure the size of the nuclear test explosions as well as determining their exact time and position.

To reach their present positions, the Soviet ships cross the restricted area around Johnston Island, the spokesman said.

In answer to a question, he said that even within the restricted area the United States has no power except to warn ships of danger.

"Although they are currently just outside the restricted boundaries, they

have ignored a U.S. Navy destroyer which approached to warn them of possible danger," the spokesman said. He added:

"Following the last U.S. nuclear test conducted in the Pacific in 1958 the Soviets complained that another of their research ships had suffered fallout damage, and protested to the United States.

"Yet by maneuvering and remaining so close to the well-publicized restricted boundaries, they

## ★ ★ ★ ★ U.S. Fires 13th N From Plane Near

The 13th blast in the U.S. Pacific nuclear test series—Operation Dominic—was set off today near Christmas Island.

The latest explosion at 5:15 a.m. Hawaiian time, was announced by the Department of Defense and the Atomic Energy Commission.

There was no indication that the test

Monday's Circulation

104,280

COMPLETE  
N.Y. STOCKS  
IN THIS EDITION

# Honolulu Star-Bulletin

Vol. 51, No. 145

★★★★

HONOLULU, HAWAII, FRIDAY, MAY 25, 1962

HOME EDITION





4—Hilo Tribune-Herald, Wednesday, February 12, 1964

## U.S. Toughens Arsenal Against N-Blow

By RAY CROMLEY

WASHINGTON—(NEA)—Below the surface of debate over reliability of U.S. missiles lies a definite scientific problem we are moving with all possible haste to correct.

Responsible missile scientists question after a strong Russian nuclear attack how many missiles we are certain will be usable and accurate. The damage they fear is from radiation and neutrons which would be liberated by enemy blasts.

With conventional circuitry, high-intensity radiation pulses from a nuclear explosion can scramble the memory of a missile guidance computer, prematurely trigger a decision circuit and cause other equipment malfunction.

A one-megaton explosion in space will produce a crippling 10-million-roentgen-per-second pulse more than 110 miles away. Effects of these pulses have been measured through almost a quarter of a mile of earth.

★ ★ ★

STEPS ARE BEING TAKEN to correct these difficulties. The Defense Department is installing circuits, tubes, insulation and sensing devices better able to withstand this electromagnetic pulse.

Some components are being sealed in vacuum so there is no air to be ionized and cause stray currents. Components made of metal-ceramic combinations are being substituted for components made of radiation-susceptible organic materials.

Some circuits will be kept at high temperatures to defeat the effects of sudden electromagnetic pulses. Some parts of the missile control system are being rejiggered to operate at higher frequency levels less likely to be

The reason for lingering doubt is simple. It isn't always possible to know what big-scale pulses will do simply by making small-scale tests and applying mathematics.

Therefore the Defense Department is pushing a series of experimental projects aimed at working out new techniques for testing the effects of nuclear explosions and electromagnetic pulses on the complex electronics of our missile systems.

★ ★ ★

BY THIS SAME TEST of reliability, bombers would seem to be even less reliable than the big missiles. That is, a smaller percentage of intercontinental bombers would probably live through an all-out Soviet nuclear attack. Fewer would get through Red defenses.

Polaris submarines should be in better shape. If they're hidden in the seas, far from targets, it's unlikely that large nuclear weapons will explode nearby. The water also helps damp any electromagnetic pulse.

The Pentagon theory, therefore, is that a combination of Minutemen, Titans, Polaris submarines and intercontinental bombers should guarantee there will be enough missiles and bombers workable to defeat the Soviet Union if Khrushchev should attack—or to deter him from doing so.

★ ★ ★

*an Orchid Lei*

To Harold H. Manago of Captain Cook, Kona, appointed as Second Senatorial District mem-

affected by the electromagnetic pulse sent out by a nuclear expulsion.

Missiles and their sites are being hardened against radiation as well as blast. Shielding is being inserted to protect sensitive components.

★ ★ ★

THE NUCLEAR BAN makes full-scale tests of the new equipment impossible. Small-scale tests have been satisfactory. By mathematical interpolation, the defense scientists reason, the Minuteman and Titan missile complexes probably will stand up—when refurbishing is completed—against electromagnetic pulses sent out by all nuclear explosions, except those that are large and close by.

"But we're not certain beyond all doubt," says one scientist. "And in defense we must be absolutely certain; that's why we're keeping the intercontinental bombers, too."

ber of Board of Education.

★ ★ ★

To Tadashi (Ted) Suzuki of Hilo, named as Hawaii County member of Hawaii Housing Authority.

★ ★ ★

To Donald S. Shintaku of Kapapala, Kau, named State Outstanding Young Farmer of 1963.

★ ★ ★

To John Kekua of Hilo, re-elected president of Hawaii Island Chapter of National Foundation.

★ ★ ★

To James L. Reid of Hilo, named member of the Maritime Administration Unit of the National Defense Executive Reserve.

★ ★ ★

To Wataru Kohashi of Hilo, elected president of AJA Veterans Council.



Friday, February 14, 1964

Santa Cruz Sentinel -23-

Biossat &amp; Cromley

# Washington Column

NEA Washington Correspondent

## U. S. Toughens Arsenal Against Nuclear Blow

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A-6 Honolulu, July 23, 1967 THE SUNDAY STAR-BULLETIN &amp; ADVERTISER

★ ★ ★

# Grim Scenes Painted by McNamara

WASHINGTON (UPI) — Raging fire storms 100 times more intense than those which consumed Hamburg, Germany in World

War II engulf America's cities. Much of the continent's oxygen is consumed by them. Tidal waves triggered by a nuclear explosion destroy Hawaii and Alaska. No one knows how many millions die.

The picture was painted yesterday by Rep. Craig Hosmer, R-Calif., ranking GOP House member of the

House - Senate Atomic Energy Committee. He offered a scenario to describe what could happen to the United States under the nuclear strategy of Defense Secretary Robert S. McNamara.

The kicker to Hosmer's graphic presentation was that the aggressor, who he leaves no doubt is Russia, would accomplish his monumental scope of destruction with just 18 weapons, each carrying a warhead of 100 megatons.

Retaliation, the threat of which is supposed to prevent such a happening, would fail, Hosmer said, because the electromagnetic

pulse emanating from the explosions would interfere with the guidance systems of the offensive American missiles.

Missiles that are launched and bombers that go off the ground can easily be taken care of by the Soviet anti-missile system, with which Russia is moving ahead in contrast to McNamara's cautious approach to a U.S. system, Hosmer said.

The Defense Department issued a statement strongly disputing Hosmer's claim that the United States would be powerless against a Soviet attack.

Air Force Secretary Har-

old Brown declared: "assertion that U.S. nuclear forces could be rendered ineffective by 18 Soviet megaton weapons or such weapons has no foundation in fact. Our deterrence capability is assured by the fact that our strategic nuclear force consisting of land-based missiles in hardened silos and submarine-based missiles and a few bombers can survive enemy attack, reach the enemy and penetrate his defenses to inflict damage on him."


"And on each system, we have an advantage over the Soviet Union."

## ENGINEERING ELECTRONICS TECHNOLOGY SCHOOL

Two years of high school math required for entrance, plus successful passing of aptitude tests. Almost unlimited opportunities in the Pacific Area. New York Tech (founded 1910) Honolulu extension school, 1275 Dillingham Blvd. Phone 815-827. Day and Eve. classes. Approved for Vets.

## WITNESSES

To the accident between a compact car & a truck on Ala Moana Blvd. (near entrance to the park) around noon Monday, July 10th.  
Please call Mr. Dizon at 943-322.



Sears

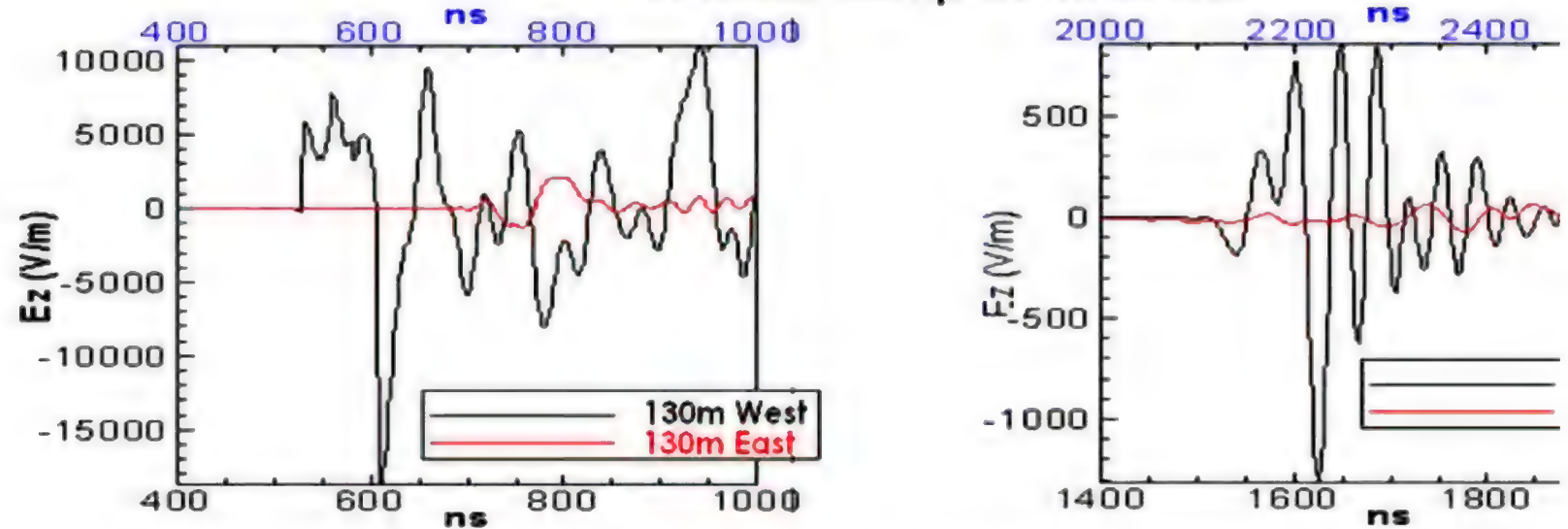


Patio Shop  
SALE





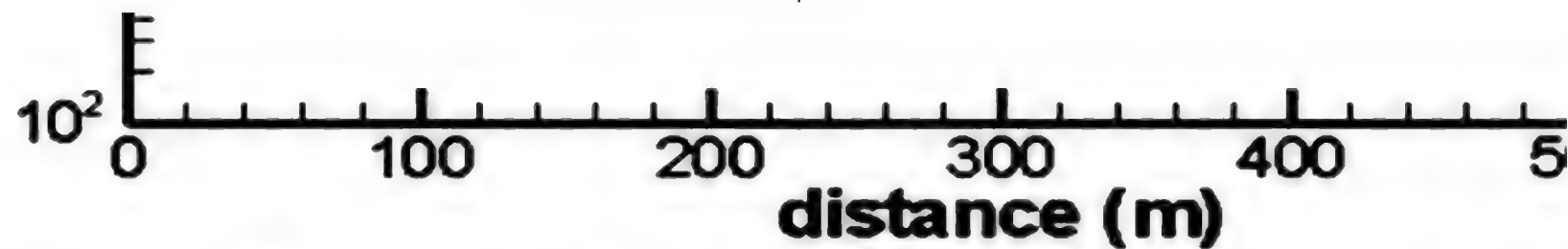
## Vertical component of EMP



William S. Smith, et al., Nuclear EMP simulation for large-scale urban environments, Los Alamos, LA-UR-12-20227, 2012

## How the EMP is attenuated by





Effects of buildings on maximum EMP  
from a generic "Fatman" type bomb  
in downtown Houston, Texas

Tall buildings (1) attenuate  
prompt gamma rays, (2)  
the line-of-sight (UHF) EM

Scott Smith, Jeff Bull, Trevor Wilcox, Randy Bos, Xuan-Min Shao, Tim Goorley, Ken  
Nuclear EMP simulation for large-scale urban environments, Los Alamos LA-UR-12-2

Weather  
Fair, Mild  
High 85  
(Details on Page 19)

THE EVANSVILLE COURIER

File

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22 PAGES

COMMUNICATIONS BLACKED OUT TEMPORARILY

*H-Bomb Believed Exploded Record 400 Miles In Sp*

Honolulu, Hawaii (UPI)—Scientists in Hawaii estimated Monday that the hydrogen bomb over Johnston Island, a multi-colored blast that was visible for 3,500 miles and temporarily blacked out trans-Pacific communications, exploded a record 400 miles in space.

The huge fireball 700 miles away over Johnston Island was seen clearly early Monday by scientists atop 10,000-foot Mt. Haleakala on Maui, an observation point from which altitudes of previous blasts have been computed accurately.

In the megaton range, with power estimated at five million tons or more of TNT, the communications test shot was the biggest and highest of the current series at Christmas and Johnston Islands.

If the Hawaii estimate proves correct, it would be the highest U. S. nuclear shot ever. The highest previously announced

were 300 miles, with much smaller explosions.

The high altitude H-bomb blast has been the target of protest by many scientists and has been denounced particularly by Iron Curtain nations.

THE 400-MILE estimate increased speculation that this might be the end of testing at Johnston this year. In two previous attempts instrument malfunction forced intentional destruction of the nuclear devices in flight. Weather caused several delays.

Originally the Johnston schedule called for three or four shots, starting at around 30 miles and stepping up to 500 or more. Some observers believed Sunday night's test was intended to gather all possible high altitude information in one shot.

It was designed to test the effects of a hydrogen explosion on radar and radio communications and show whether an electronic screen might be an effective defense against enemy missiles by disrupting their guidance systems.

Atomic experts in Washington said they expected little or no radioactive fallout from the test. Some of the debris, they said, would be hurled free of the earth's gravitational field. Other debris would be so widely scattered as to be comparatively harmless when it reaches earth.

"THERE IS no doubt," one authority said, "that space tests are the safest of all above-ground shots from the standpoint of fallout."

A spokesman for the U. S. Coast and Geodetic Survey in Honolulu said examination of magnetic field graphs showed a "very sharp departure" at time of detonation. This was followed by five or six minutes of activity, with a return to normal in about 30 minutes.

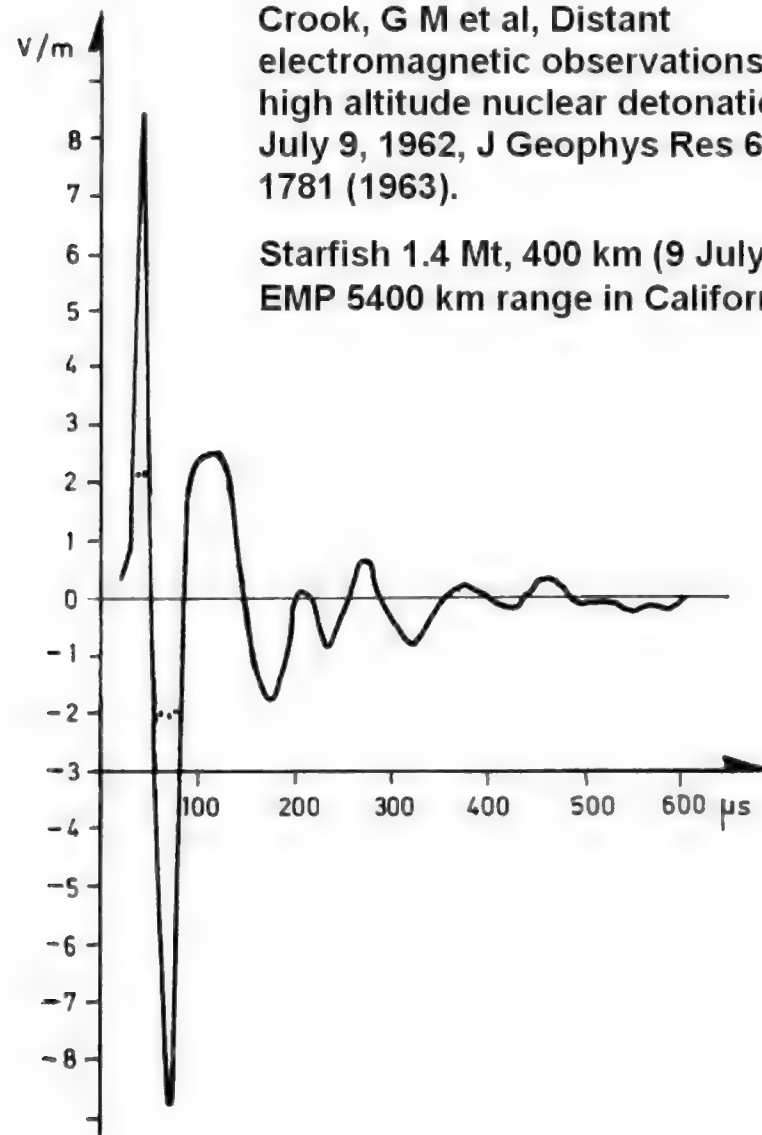
The spokesman said the blast made a "sudden impulse" on the graph. He indicated it was much greater than had been expected and he expressed amazement that the magnetic fields returned to normal so quickly.

Disappointed by two previous failures in the air and by several postponements, sky-watchers in Hawaii and Fiji were rewarded richly.

Watchers in Hawaii, 750 miles northeast of Johnston, saw the sky lighted from horizon to horizon in icy blue, green, red and pink. Fifty minutes later a glow resembling the northern lights still hung in the sky.

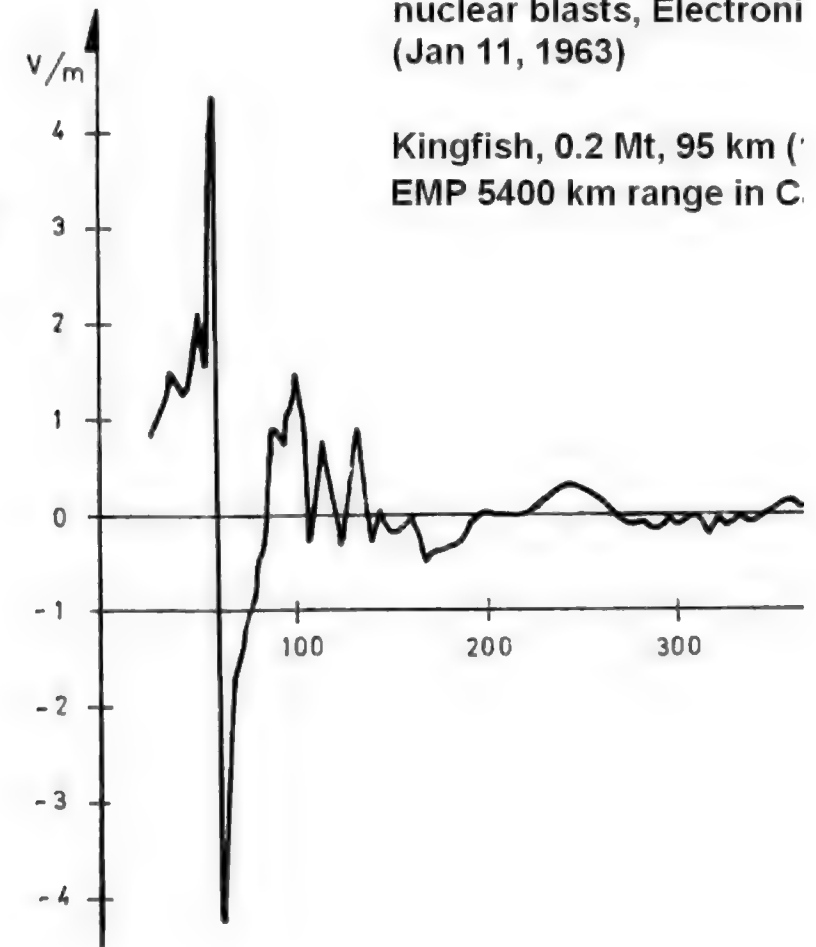
IN THE FIJI Islands, more than 2,000 miles southwest of Johnston, residents saw the sky successively turn white, green, yellowy orange and crimson red. The flash was visible even in

New Zealand where the sky at the detonation glow followed by hysteria, some saw switchboards. In Hawaii, at 11 p.m. by some areas the glare alarms faded sirens. There were extinguishers. (Continued on



Crook, G M et al, Distant electromagnetic observations of the high altitude nuclear detonation of July 9, 1962, J Geophys Res 68, p 1781 (1963).

Starfish 1.4 Mt, 400 km (9 July 1962). EMP 5400 km range in California, 1962



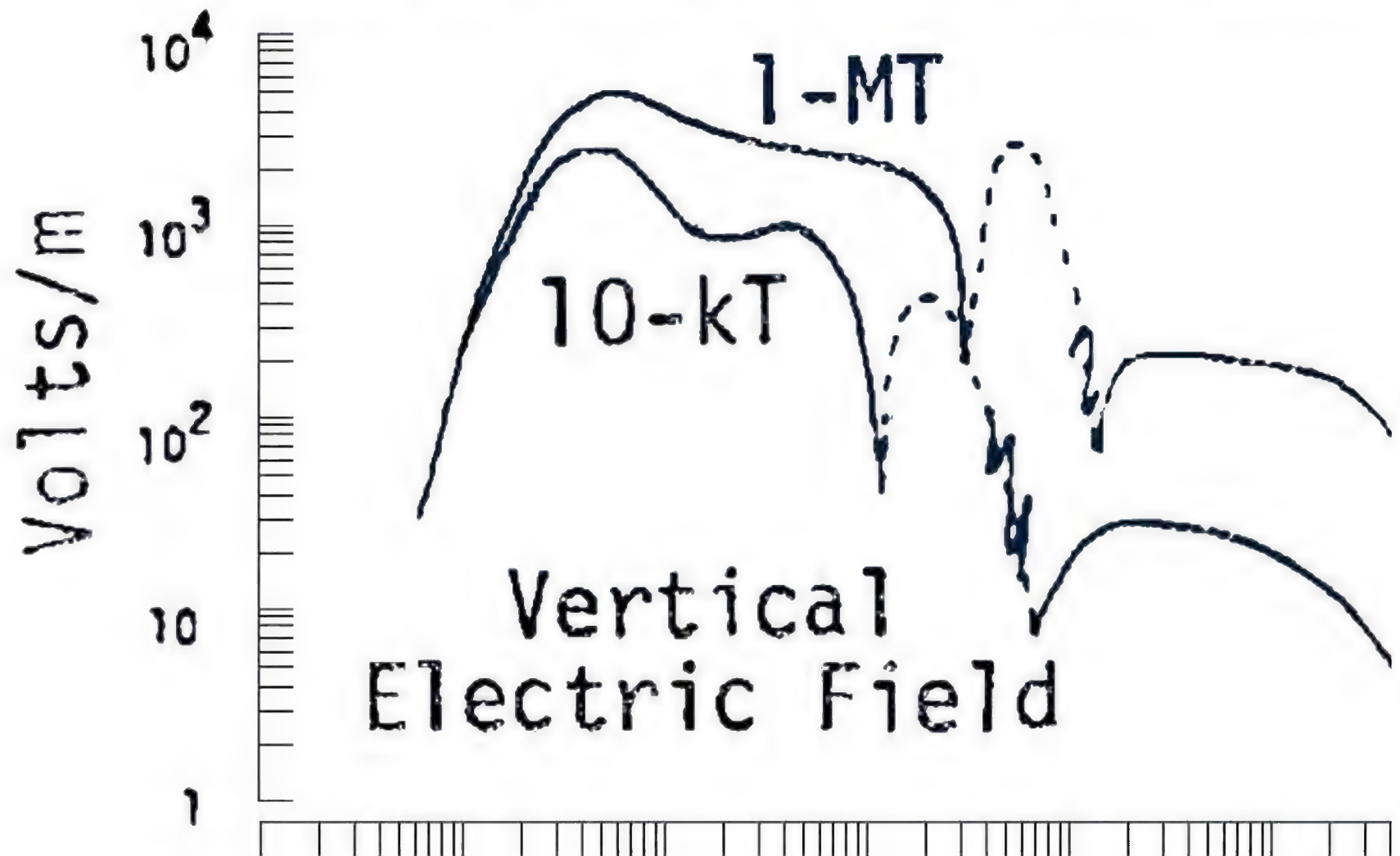
How radio can plot high nuclear blasts, Electroni (Jan 11, 1963)

Kingfish, 0.2 Mt, 95 km (1 Jan 1963). EMP 5400 km range in California, 1962



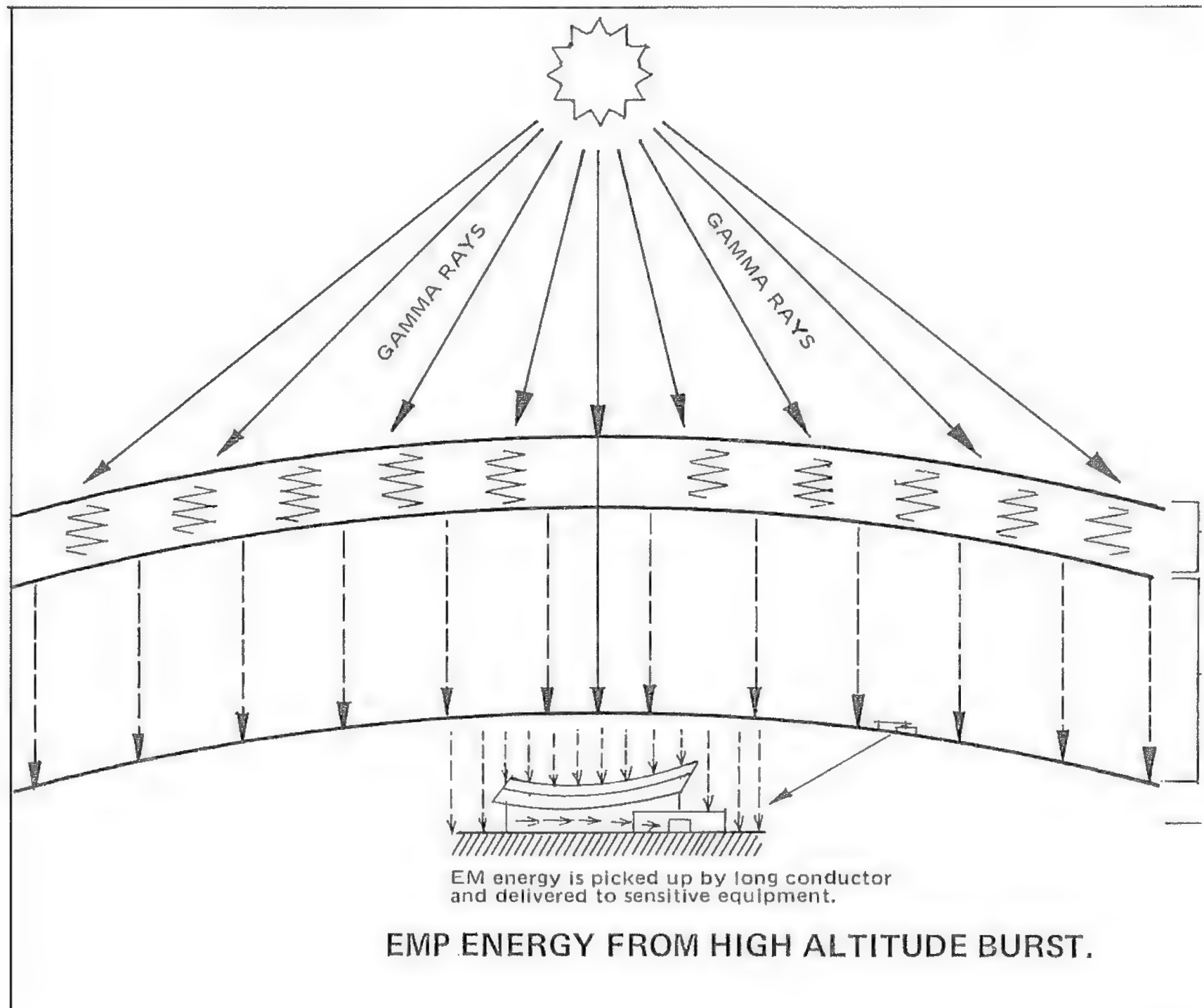
C. L. Longmire, "History and Physics of EMP," presented at  
Fourth NEM Symposium, Baltimore, Maryland, July 2, 1971

**10 km range from surface bursts (solid lines = negative fields; dashed lines = positive fields)**



$10^{-7}$     $10^{-6}$     $10^{-5}$     $10^{-4}$     $10^{-3}$   
Time, seconds







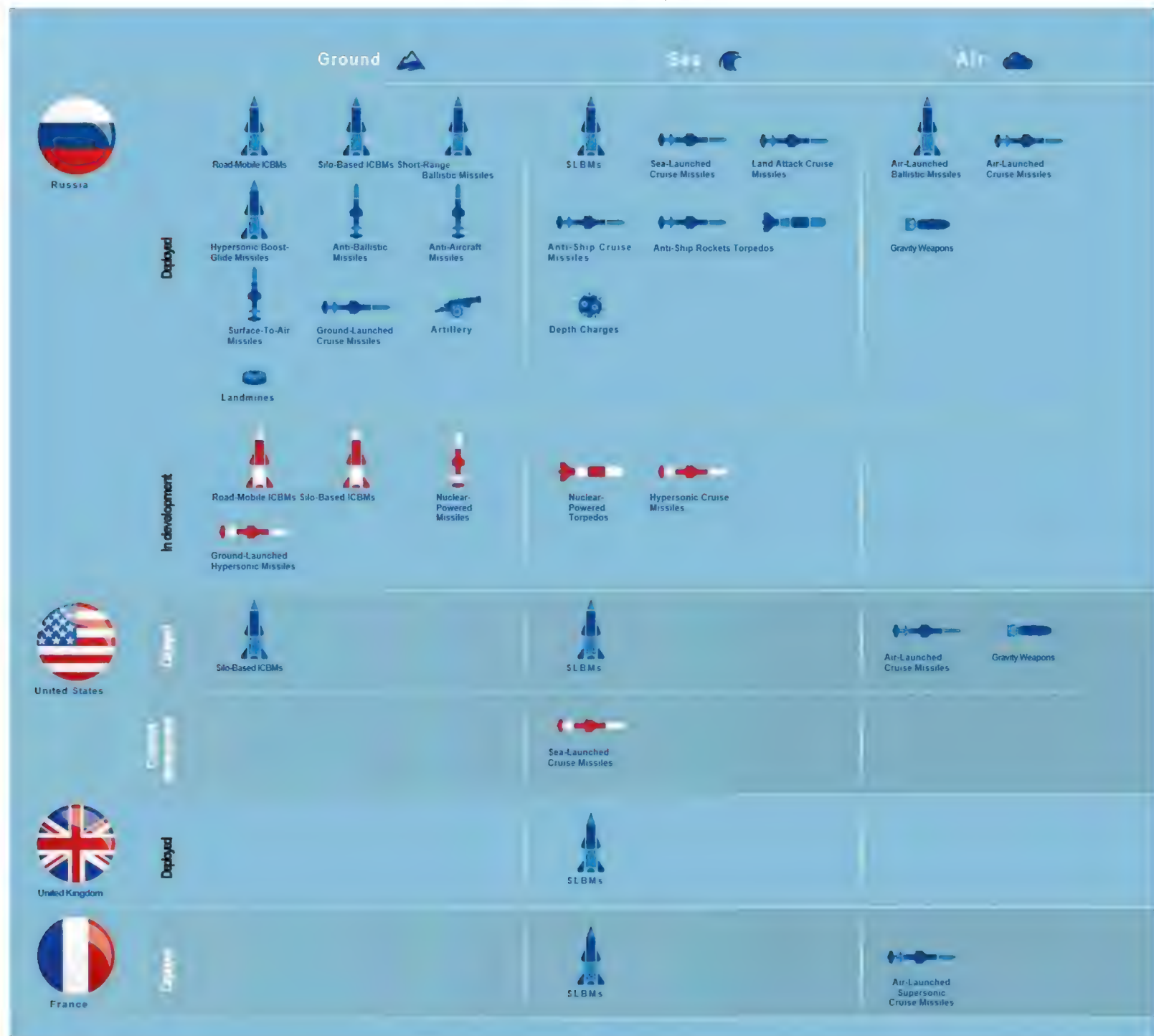
ABOVE: the British government's **approved chart of nuclear weapons which notes that Russia has kept some nuclear weapons secret and not listed**, which is accompanied by a text which seems to be virtually a carbon-copy of Baldwin's government's 1935 announcement of Germany's rearmament threat, complete with the same demented disarmament-ain't-working-as-we-hoped complaint that: **"The UK has taken a consistent and leading approach on nuclear disarmament but not all states have followed. ... To help explain how some states are expanding their nuclear capabilities, NATO have prepared this graphic which uses Russia's expanding arsenal as an example of this trend and compares it with the systems held by the UK and fellow NATO nuclear weapons states France and the United States. It shows that Russia is significantly increasing the variety of nuclear capable weapons that it possesses. This is in contrast to the work that the NATO nuclear weapons states have undergone to reduce and maintain relatively modest arsenals since the Cold War ended. China also continues to modernise and expand its nuclear capabilities. ... It is wrong to say that the UK's nuclear deterrent is never used. The reality is that it protects us every hour of every day. By providing a credible and effective response option to extreme aggression, our nuclear deterrent reduces the likelihood of such an attack taking place."** (No, mate: the point is that we failed to deter the invasion of Belgium in 1914, and of Poland in 1939, leading to World Wars that murdered tens of millions, then we developed tactical nuclear weapons and used them to deter invasions from the 1950s onwards, too late to help Eastern Europe, but "better late than never". Now we have none, due to 1990s disarmament activists being unopposed and using Glasstone's 1977 horseshit non-military lying nuclear effects manual, applying open desert unshielded thermal and blast data falsely to concrete cities that shield effects, instead of giving neutron bomb effects data for invading tanks and troops! We need change tactics urgently or risk costly, bloody escalations.)

Ambiguity. Foreign Secretary Edward Grey's lying *"it was the arms race wot done it, honest"* excuse after refusing to credibly deter WWI in 1914 - because he wouldn't tell Germany in advance whether the invasion of Belgium would trigger Britain to declare war (the Cabinet couldn't make up its mind until too late to credibly deter Germany), was the ambiguous recipe for arms race-avoiding disaster which Chamberlain and other appeasers followed in the 1930s. Providing that arms industry contracts corruption can be carefully minimised, as in the West in WWII and the Cold War, arms races have historically proved to be far more damaging to dictatorships than to Democracies! You have to escalate an arms race until the opponent is bankrupt, the opposite of 1930s unilateral disarmament which leads to world war and genocide.

**Herman Kahn's 1960 RAND Corporation paper P1888-RC, *The nature and feasibility of war and deterrence* (a summary of a few key point in his book of the same year, *"On thermonuclear War"*, but better organized and briefer)** states Malenkov introduced the mutual assured destruction anti-war deterrence concept to Russia, before he was replaced by Khrushchev who took a very different view, repeatedly threatening nuclear war against Eisenhower's defense of West Berlin, even before Russia had the nuclear superiority in clean high neutron output tactical weapons it has today:

**"Even mutual belief in the automatic annihilation theory can still lead to trouble; the invitation to blackmail of the Munich type** [*Hitler threatened retaliation if his invasion of Sudetenland was interfered with in 1938, leading to appeasement which effectively invited*





him to invade the entirety of Czechoslovakia and then Poland the next year, triggering a world war] ... **Would only an insane man initiate a thermonuclear war? A war might start as a result of an accident, some miscalculation, or even irresponsible behavior**

[EMPHASIS ADDED; Kennedy used Kahn's words here in his May 1961 civil defense fallout shelters implementation speech, and this point about irresponsible behaviour by the Kaiser, Hitler and Stalin in jointly invading Poland from different sides in 1939, the Pearl Harbor attack plan, etc., is also emphasised as the key risk of global nuclear warfare in Sir John Hackett's book *The Third World War* and is especially relevant to a dictator cornered by financial debt pressures like Hitler, medical issues like Anthony Eden's perforated bowel agony during the Suez Crisis of 1956, Chamberlain's cancer in 1940 which nearly put appeaser Lord Halifax into power instead of gung-ho adventurer Churchill - whose apparent eventual success actually owes a very great deal to Hitler's decision to invade it's partner in the September 1939 Polish invasion, Russia, on 22 June 1941 and then to declare war on America following Pearl Harbor, deciding to follow the terms of his 27 September 1940 Tripartite Pact with Japan; factors that Churchill could not have relied upon when refusing to negotiate with Hitler, and didn't when formulating his contingency plans to move the UK government to Canada in the event of a successful invasion of the UK; the anti-nuclear Russian scam propaganda about "nuclear accidents" are a red herring unless actually deliberate false-flag "sink the Maine" excuses for escalation to try to end the war (if there is a nuclear accident it won't start a war unless it is a contrived plot to do so, as when implementing the Schlieffen Plan in 1914); there is also the continuing debate over whether Stimson was irresponsible in his advice to Truman that Hiroshima and Nagasaki were simply military targets, when they also contained large numbers of civilians, and this issue over the errors in advice even continued when kids were napalmed in the Vietnam war under the supposed control of Kennedy's successor, Democratic President Johnson].

**"... Russian civil defense manuals (dated 1958) indicate ... preparation for evacuation for improvised fallout protection ... While this would give us a sort of warning, we might not act on it** [if you were US President, would you start WWII by firing off nuclear missiles to try to stop Russians being evacuated from cities, to undermine your second strike deterrent? no? then you can see Kahn's argument clearly. don't try to argue that you can still knock-out Russian ICBMs in their silos or SLBMs in their subs by a counterforce strike if need be. you can't, because along with evacuating or taking to good city subway or basement shelters, they also protect their missiles by switching to launch-on-satellite-warning, so that by the time your missiles arrive after a flight time of 15-30 minutes, the silos are empty and the joy of knowing you may have blown up empty Russian silos is cancelled out by receiving their contents! face it: strategic deterrence is only promoted by the Russians because it is a farce that puts the West in a very weak position. Russia has 2000+ tactical nuclear weapons not subject to arms control crap for a very good reason; they have some credibility. We can't even use our most of our ICBM's or SLBM's on dial-a-yield as improvised tactical nuclear weapons against mobile SS25's because most can simply drive out of the 4psi peak overpressure overturning blast circle of American warheads while the latter are in flight, since none of the latter are target-tracking MARV's, but merely fixed coordinate capable MIRV's that can't change trajectory to follow a moving target like the SS25, get it? dictorships aren't always totally dumb].

**"... the probability of such an attack by us is small, particularly because we have made negligible preparations to ward off, survive and recover ... Consider the bloody suppression of the Hungarian revolution [of 1956] ... Much pressure was applied for the United States to intervene. We didn't. In fact, there are reports we did exactly the opposite, broadcasting to the Poles and the East Germans not to rock the boat since no American aid was on the way.** [now, compare then to now! Eisenhower in 1956 refused to help Eastern Europe in 1956 when the USA had an overwhelming nuclear superiority, less than a year since the first Russian megaton yield



*nuclear test! Today we are helping Ukraine against Russia when the nuclear situation has reversed. Russia now has fewer conventional weapons than us, but now has more nuclear weapons, of higher average yield, with both ICBMs and dedicated tactical weapons on mobile launchers for more flexible response. all thanks to Russian dominated "arms control".]*

**"It is possible that a situation as potentially dangerous as the Hungarian revolt could arise again. We could get deeply, if involuntarily involved. ... In 1914 and 1939 it was the British who declared war, not the Germans. ... A thermonuclear balance of terror [Mutual Assured Destruction, the pseudo strategic policy fostered on us by pro Russian appeasement so-called "arms controllers and disarmers"] is equivalent to signing a non-aggression treaty ... no matter how provoking the other side may become. Sometimes people do not understand the full implications of this ... It should be clear that we would not restore Europe by our retaliation ... how many American dead would we accept as the cost of our retaliation? ... if the Soviets were to test our resolve by initiating a series of crises, they could probably find out experimentally, without running excessive risks, how much provocation we would take. No matter what our previously declared policy was, our actual policy and the possibilities would then be verified [e.g., last year Russian government representatives probed the possibilities of falsely claiming that Ukraine has nuclear weapons or radiological weapons, an absurd provocation alleged to be false flag or "Maine sinking" trick to "justify" starting a nuclear war]**

**"... the problem is to convince the Europeans if we wish to prevent appeasement as well as destruction [mate, that's precisely why France and the UK have their own nuclear deterrents; we're not stupid and are aware that historically it took the sinking of the Lusitania and Pearl Harbor to bring America into WWI and WWII, respectively, after the French and the UK had been fighting for years. bits of paper such as the NATO treaty, or for that matter the 30 September 1938 German-British signed peace collaboration war-avoiding pact, are easily ignored under stress. so it's better to ensure that Western deterrence has multiple buttons to make it really, really credible in Russian eyes. ] ... One of the most important and yet the most neglected elements of the retaliatory calculation is the effect of the Russian civil-defense measures. The Russians are seldom credited with even modest preparedness in civil defense. ... This is not only ridiculous, it is also symptomatic of the lack of realism and the prevalent tendency towards undestimating the enemy. ... the Russians might at some point evacuate their city populations ... they fought a war *after* the Germans had destroyed most of their existing military power ... Moreover, since 1931 they have had a vigorous program to disperse their industry ... the calculation in which one looks at a U.S. first strike in retaliation for Russian provocation is probably more relevant in trying to evaluate the role that the offense and defense play in affecting some important aspects of foreign policy. Under this assumption, if we have even a moderate non-military defense program, its performance is likely to look impressive to the Russians ..."**

*[this is precisely why Kennedy, in his 25 May 1961 "urgent national needs" speech to a joint session of Congress reversed Eisenhower's mad ban on American fallout shelters in public building basements in cities, and implemented Kahn's plan, despite James Roy Newman's malicious and lying hate rant against Herman Kahn in the March 1961 pseudo Scientific American. Kennedy also authorised testing of the neutron bomb tactical deterrent plan, devised by Kahn's friend and fellow RAND Corp physicist Sam Cohen, employing the low-yield, relatively-clean Dove and Starling devices developed by Livermore for peaceful ends. Kahn in his longer book of 1960, On Thermonuclear War goes even further against high-yield nuclear weapons by analyzing the absurdity of the "Doomsday" bomb: the bottom line is that Hitler actually made such a WMD in the form of 12,000 tons of tabun nerve agent, which proved useless to deter an invasion, because we had more rubber than the enemy for gas masks (defence) and we could retaliate with mustard gas, anthrax, etc. So*

*Hitler never loaded 12,000 tons of tabun into his bombers, V1 cruise missiles (150 miles range) and V2 rockets (200 miles range). Even in WWII, therefore, the myth WMD's were debunked.*

*If you divide Hitler's 1945 stockpile of 12,000 tons of nerve agent tabun into the lethal dose of tabun per person (less than 1 mg, i.e.  $10^{-9}$  ton), you see that according to the kind of statistical nonsense "overkill theory" used with a trembling voice in TV and newspaper "arms controller" articles to get funds, Hitler in 1945 possessed enough tabun to kill  $12,000/(10^{-9}) \sim 10^{13}$  people, which is obviously cause "arms controllers" to faint, because if true it's a thousand times more than entire world's population! So the loons can claim: "Hitler could have theoretically over-killed the entire world's population by a thousand times in 1945 using his 12 kt of tabun!" But it proved historically as useless to deter our invasion of Germany as our strategic nuclear weapons were to deter Russia's invasion of Ukraine, because of retaliation risks, defences, and exaggerations (unless you use gas in a the Nazi preferred technique of the sealed gas chamber; a fact the Nazis knew all too well from their use of non-persistent Zyklon B aka hydrogen cyanide). Kahn discovered you need a credible deterrent and setting off the Doomsday bomb (whether nerve agent, cobalt or gigaton H-bomb), is just not credible to defend your borders. **Nobody can make a credible deterrent out of an incredible action.** BTW: These latter words ain't mine: they're a quotation from McNamara in his 1989 UK Channel 4 documentary titled, "The nuclear age: the education of Robert McNamara", where he summarises his (Vietnam war bombing failure to win) experiences, while only getting it half right: he correctly concludes that strategic nuclear deterrence is a load of incredible crap, but foolishly tries to then claim that going back to 1930s disarmament and Russian appeasement is a sure fire way to avoid another world war.]"*

Examples of omissions and deceptions in Glasstone and D...



11 May 2023 Russian State TV Channel 1 nuclear testing a...



ABOVE: 11 May 2023 Russian State TV Channel 1 nuclear testing and nuclear bombing of UK - threats and abuse. Since 2006 we've been dedicated to debunking anti-nuclear propaganda and promoting for how to deal with this situation safely and without war escalating appeasement, using PROVED techniques from the 1st Cold War which are opposed by Putin loving "arms controlling disarmers" who lie about nuclear weapons to try to brainwash the public just as gas war was used in the same way by similar folk to win "peace" prizes in the 1930s to help the Nazis commit genocide and world war. We need YOUR help by reblogging this post please!!! See:

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Glasstone's Effects of Nuclear Weapons exaggerations completely undermine credible deterrence of war

+ NEW POST

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Posts

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Stats

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Comments

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Earnings

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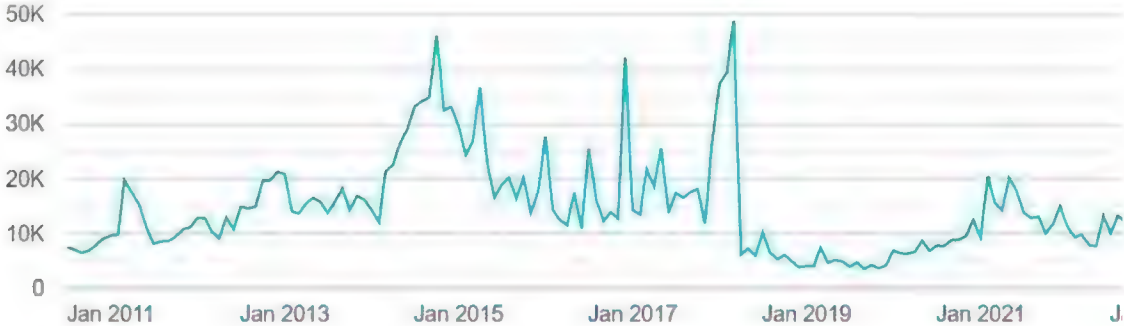
Pages

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Layout

Glasstone's Effects of Nuclear Weapons exaggerations completely undermine credible d

Views





Posts




Samuel Glasstone and Philip J. Dolan







Posted by...









Glasstone's Effects of Nuclear  
 Weapons deception is  
 Russian propaganda to  
 support our disarmament!!




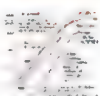
 Posts
  Stats
  Comments
  Earnings
  Pages
  Layout



 The lack of any credible deterrence led to the invasion of Ukraine by Russia today.  
 Posted by nige



 Declassified data on structures exposed to nuclear weapons tests in the Pacific  
 Posted by nige

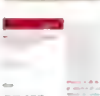

 The January 1955 secret Fallout symposium of the AFSWP. LAST UPDATED 3 Aug  
 Posted by nige


 Racist socialist and hatred inciting propaganda from mass murder regimes: the fo  
 Posted by nige


 EMP radiation from nuclear space bursts in 1962  
 Posted by nige


 U.K. Home Office Scientific Advisory Branch 'Protect and Survive' civil defence res  
 Posted by nige


 1929 photo of Dr Samuel Glasstone for a Leeds Mercury newspaper love story (pl  
 Posted by nige


 Gas masks or EH20 escape hoods as an alternative to economic disruption due to  
 Posted by nige

ABOVE: an update on results from getting the message out there as a result of 17 years of this blog. As of Saturday 13 May 2023, blogger statistics show over 2.2 million visits (no idea whether this is from 2006 or 2010; the blog began in 2006 but blogger do not give graphs of statistics going back to when it began!), to this site, the "peaks" in the statistics occur in part it seems due to the reblogging of blog posts at places like [Military Story](#) and [The Next Big Future](#). As stated in the previous post, the history of this blog began in World War Two when dad and his sister were evacuated as kids from Essex which was receiving bombing, to Devon. He contracted TB from contaminated milk as a child which left him emasculated, so was rejected for National Service, but went into the Civil Defence Corps instead, finding recruitment a disaster due to Russian lying propaganda that the UK government wouldn't debunk with its nuclear test data of shelters at Monte Bello. I was encouraged to go into physics by dad to try to do something, but most people in the media aren't interested in reality, just fashionable boring bigotry, celebrity, sophistry, lying and encouraging Russian aggression. Thomas Schelling in the 60s came up with

The screenshot shows a web browser window with the address bar displaying `blogger.com/blog/stats/week/24924615`. The page title is "Blogger: Stats". The main content area shows the blog name "Glasstone's Effects of Nuclear Weapons" with a dropdown arrow. Below the name, it says "Weapons exaggerations completely undermine credible deterrence of war". To the right of the blog name, there are statistics: "8 followers", "128 posts", and "1100 comments". Below these statistics, there is a "NEW POST" button. At the bottom of the page, there is a "Latest Post" section with a thumbnail image and the text "The lack of any credible deterrence led to the invasion of Ukraine by Russia today, 22 02 by nige on 22 Feb 2022".

Blogger: Stats

blogger.com/blog/stats/week/24924615

Glasstone's Effects of Nuclear Weapons

Weapons exaggerations completely undermine credible deterrence of war

8 followers 128 posts 1100 comments

+ NEW POST

All time 2246931 Today 82 Yesterday 208 This month 2196

Posts Stats Comments Earnings Pages

Latest Post

The lack of any credible deterrence led to the invasion of Ukraine by Russia today, 22 02 by nige on 22 Feb 2022

the theory of reversing the principles of war to win a Nobel prize for losing Vietnam, like liars Angell and Philip Noel-Baker who got Nobel prizes for starting WWII.

This "war game" subterfuge of "peace propaganda for universal love via Hitler the man of peace" is like this: claim, like Angell and Noel-Baker, that jaw-jaw is better than war, that all wars are nuclear accidents not the result of jaw-jaw, and you get a prize if you have sufficient celebrity status or academic prestige to use to command media attention, out-lying the other utopian idealists to climb the greasy pole of Nazi-supporting assholes, or you claim that by arms control parity and a surrender of tactical nukes to prevent credible deterrence

of Russia, plus refusing to escalate a war rapidly enough to demoralize the opponent into genuine surrender (hardly what happened in Vietnam 1975 or Afghanistan 2021 after "peace talks") - Thomas Schelling's epiphany for peace through negotiating with terrorists (plagiarized from 30s Chamberlain, Angell, Joad, Noel-Baker, et al.) - then you are hailed a "wizard of armageddon" (Kaplan's term). Wow. You get a Nobel peace prize or better still, like Schelling, the Nobel economics prize for bankrupting your country! All you need to do is you get enough left wing thugs behind you by promising them peace on earth. (You used to also get the Lenin Peace Prize, like Minus Pauling, but maybe that's a bit outdated and stinks of shit too much, don't you know? Oh, and by the way, if anyone wants to bring up religious "be a Christian peacemaker" arguments regarding fighting evil dictators: **Jesus's message wasn't to marry Hitler for peace or even to live on your knees under Roman/Russian Dictatorship, but to**

**"Think not that I am come to send peace on earth: I came not to send peace, but a sword." - Matt 10v34.)**

Attempts to show that *some arguments, namely those in which both sides are honest and act in good faith*, can be resolved by negotiation, so **"by logical extension"** this proves negotiating with Hitler would have prevented a world war, are fake! Maybe the Nobel Peace Prize can be awarded for Mr Putin and Mr Zelensky to sign a compromise peace deal, maybe a "power sharing" deal like the Northern Ireland sort, where Crimea and Eastern Ukraine are shared between Kyiv and Moscow (and all the dead due to Mr Putin's illegal invasion are quietly ignored to reduce tensions as the two parties pop the Champagne cork and celebrate)? Even if that "compromise" (note the quote marks) is somehow achieved, *a lot of innocent people will have been murdered needlessly due to the "disarmers" of both Ukrainian nuclear weapons and Western dedicated Cohen neutron bombs, deliberately causing the failure to credibly deter the invasion and war from breaking out, and we've been saying this long before Putin invaded. It's not "hindsight"!*





## **Recently declassified high quality photos of the effects of the 1949 Russian nuclear test RDS-1 on**





**Extracts from Beria's № 163 final (28 October 1949) report to Stalin the 1949 Russian nuclear test data**  
**Заключительный доклад Л.П.Берия И.В.Сталину**  
**о результатах испытания атомной бомбы**

28 октября 1949 г.

Товарищу Сталину И.В.

Оптическими измерениями (произведенными при помощи специально сконструированных сверхскоростных фотокамер, дающих 600 000, 100 000 и 25 000 кадров в секунду, обычных кино- и аэрофотокамер, специальных спектрографов и других измерительных приборов, заранее установленных на дистанциях 1 800, 3 000 и 5 000 метров от центра взрыва)

**(= Russia set up high speed cameras running at 600,000, 100,000 and 25,000 frames/second at 1.8, 3.0 and 5.0 km from ground zero to film fireball.)**

Измерено, что поток теплового излучения взрыва составляет 4 % энергии деления всей массы плутония, составлявшей заряд атомной бомбы, испытанной 29 августа 1949 года.

**(= The bomb's measured thermal yield was 4%.)**

Gamma doses (R)		Neutron doses (R)		Reflected blast, tons/m <sup>2</sup>
гамма-лучей		нейтронного		Давление отраженной ударной волны
300 м	420 000	300 м	27 000 000	200 м 2 900 т/м <sup>2</sup>
400 м	155 000	400 м	38 000	250 м 1 560
500 м	68 000	500 м	12 000	300 м 770
600 м	32 000	600 м	4 200	400 м 225
700 м	15 000	700 м	1 800	500 м 82
800 м	7 800	800 м	800	600 м 48
900 м	4 200			800 м 21
1 000 м	2 300	1 000 м	180	1 200 м 12,1
1 100 м	1 260			1 800 м 6,2
1 200 м	700	1 200 м	35	3 000 м 3,1
1 300 м	410			5 000 м 1,9
1 500 м	140			
1 600 м	80			

*Действие взрывной волны на военную технику*

Из всех видов боевой техники наиболее уязвимы (самолеты): из 53 самолетов, установленных на опыте 500 до 4 000 метров, остались неповрежденными только 10 самолетов.

Артиллерийское вооружение полностью разрушено и значительно повреждено в радиусе 500 метров от центра взрыва (полного вывода из строя) танки и бронетранспортеры. Танкам в радиусе 350–500 метров нанесены серьезные повреждения.

Воздушные линии связи сильно разрушены в радиусе 500 метров от центра взрыва. Проложенные на земле, в радиусе 500 метров от центра взрыва, кабели связи полностью разрушены.

**(= Military effects:  
Out of 53 aircraft exposed at 0.5 km from ground zero, only 10 survived intact.  
Field artillery and tanks were destroyed and had significant damage out to 500 m.  
Ground-laid cables were destroyed, overhead cables were destroyed.**

**Animal Effects from Soviet Atomic Tests, by V. A. Logachev and L. A. Logacheva, 1950, report ADA48 TR-07-38):**

**"The medical/biological studies conducted on 8,000 experimental animals (cattle, sheep, dogs, rabbits, guinea pigs) in various ways to solve medical/biological problems were by carrying out experiments that used animals in open areas and in military and civilian protective structures. Animals were placed in more or less long-term structures, more than 100 days.**



1 700 м	48	10 000 м	0,9
1 800 м	30		

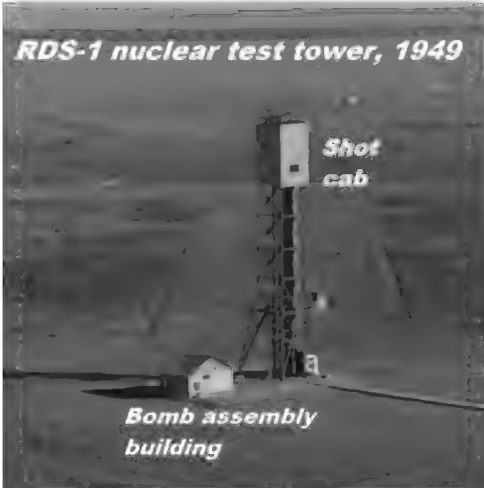
На основании принятой для взрыва тротила зависимости давления ударной волны от расстояния и веса заряда специалисты установили, что тротиловый эквивалент атомной бомбы испытанной 29 августа 1949 г. конструкции, равен 11 000 тонн тротила.

**(= Bomb's BLAST yield partition was 11 kt of TNT.)**

**items (tanks, armored personnel  
automobiles, aircrafts etc.), and  
and wooden houses."**

**Page 36: at the 1.6 megaton 1945  
burns occurred to animals in ho**

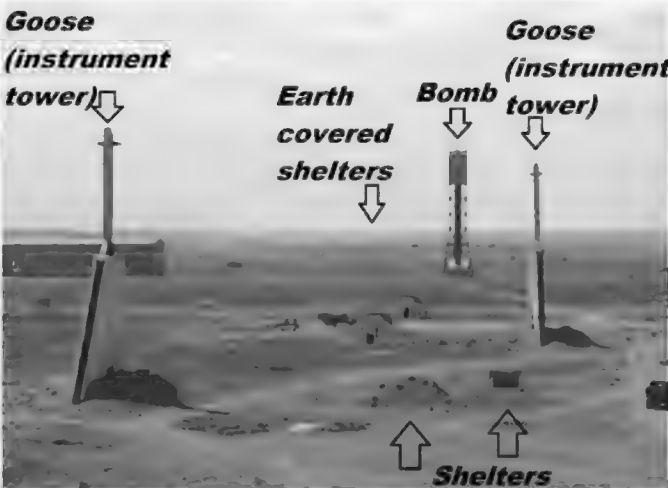




**RDS-1 nuclear test tower, 1949**

Shot cab

Bomb assembly building



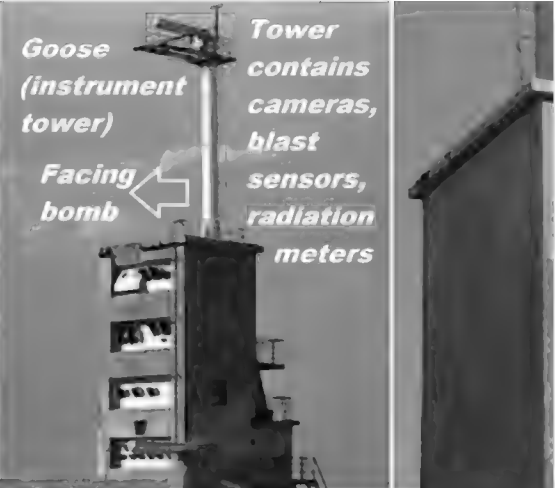
Goose (instrument tower)

Earth covered shelters

Bomb

Goose (instrument tower)

Shelters



Goose (instrument tower)

Tower contains cameras, blast sensors, radiation meters

Facing bomb



**Trench field fortifications and bomb tower**



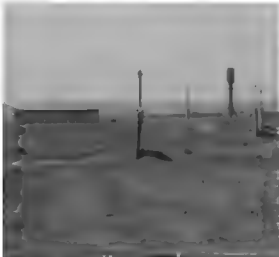
Timber framed earth-filled blast wall

**Building protected by earth-filled blast walls**



800 metres from ground zero

**Entire brick house exposed**



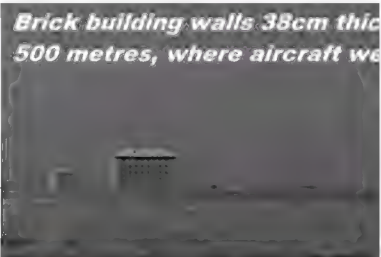
Dogs in trench shelters

Russian civil defense validated

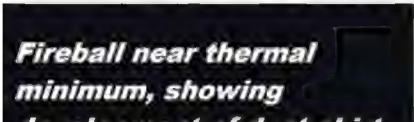


House

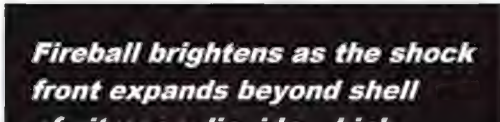
Factory



Brick building walls 38cm thick  
500 metres, where aircraft were shot down



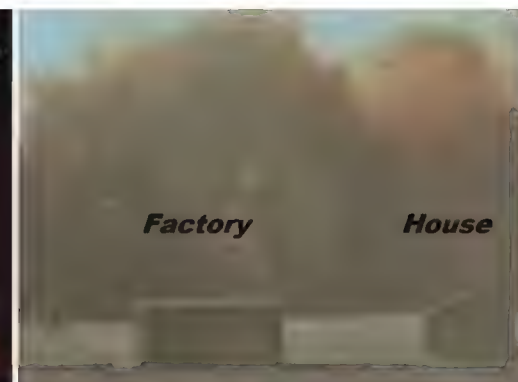
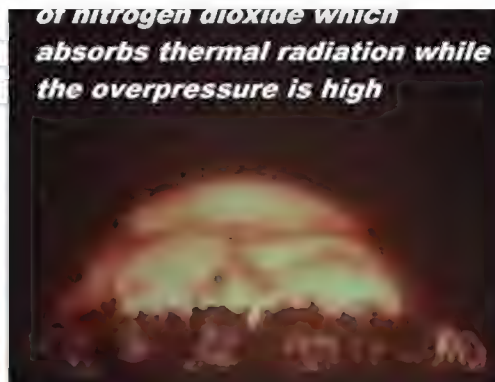
Fireball near thermal minimum, showing

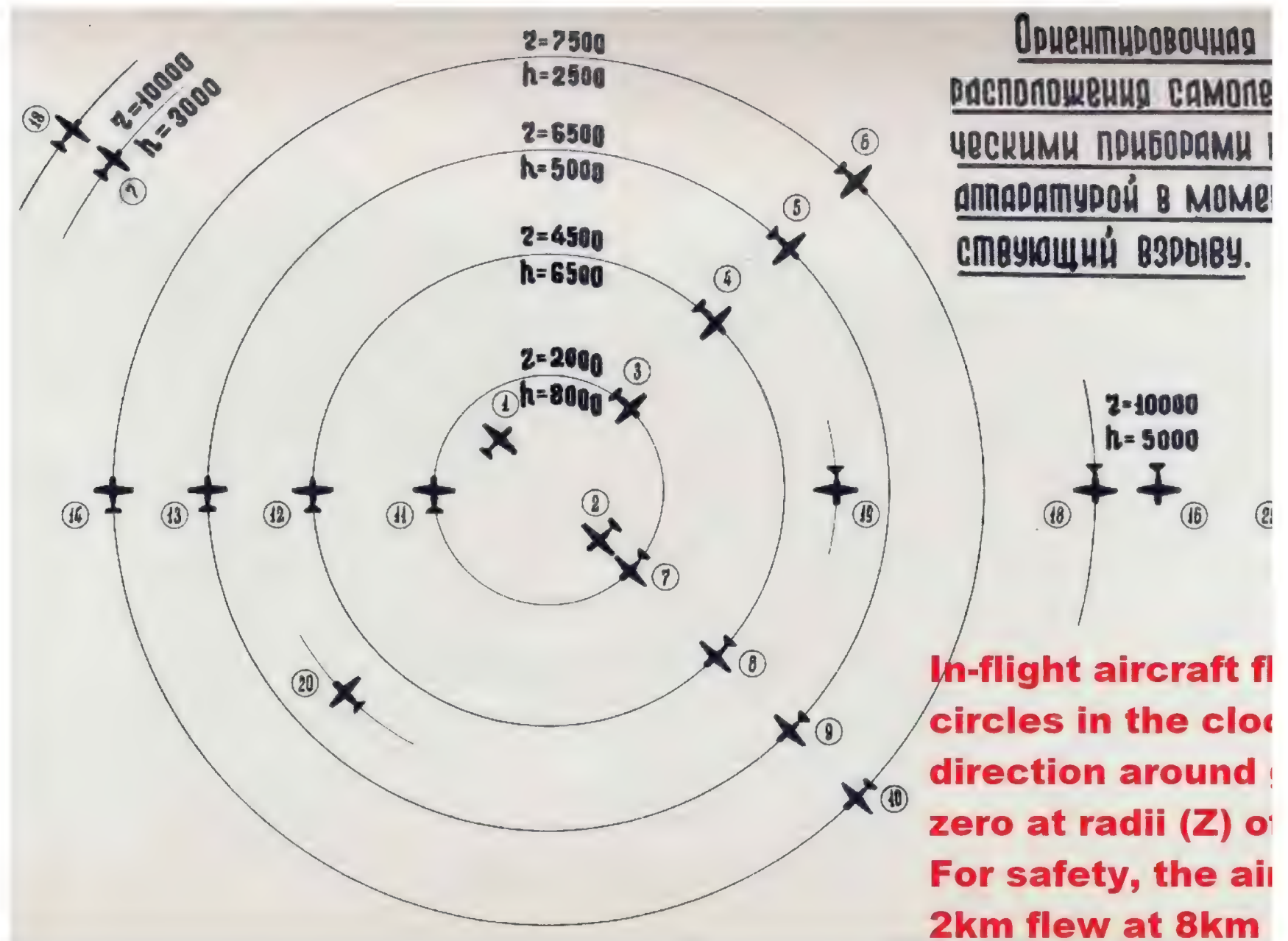


Fireball brightens as the shock front expands beyond shell



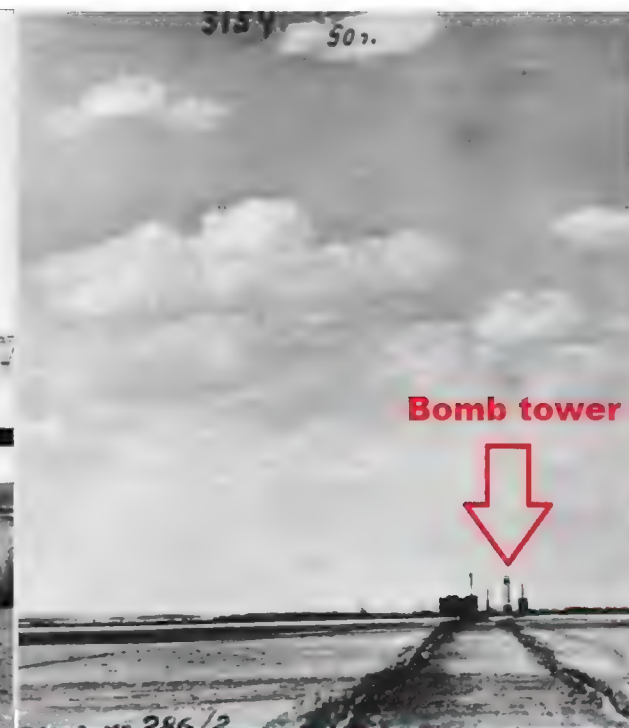
Russian apartment block smoking









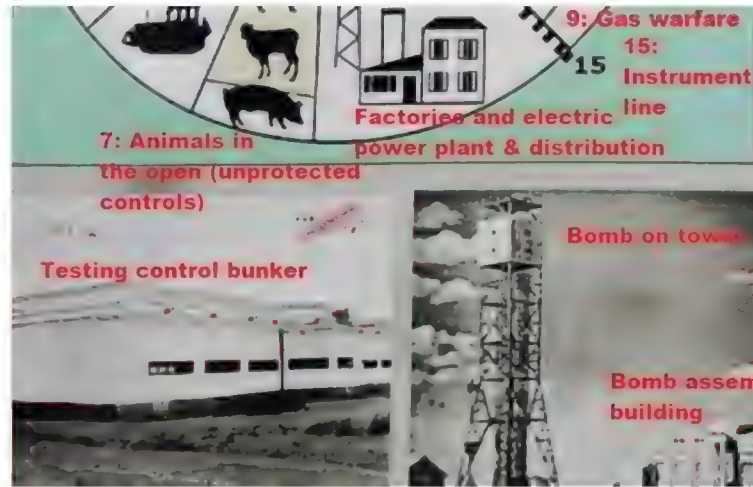


**29 August 1949 first Russian test c**

**Right: 14 different target sectors or lines stretched out to distances of up to 10 km (6 miles) from the 29 August 1949 Russian 22 kt nuclear test tower. This Russian poster uses a non-linear distance**

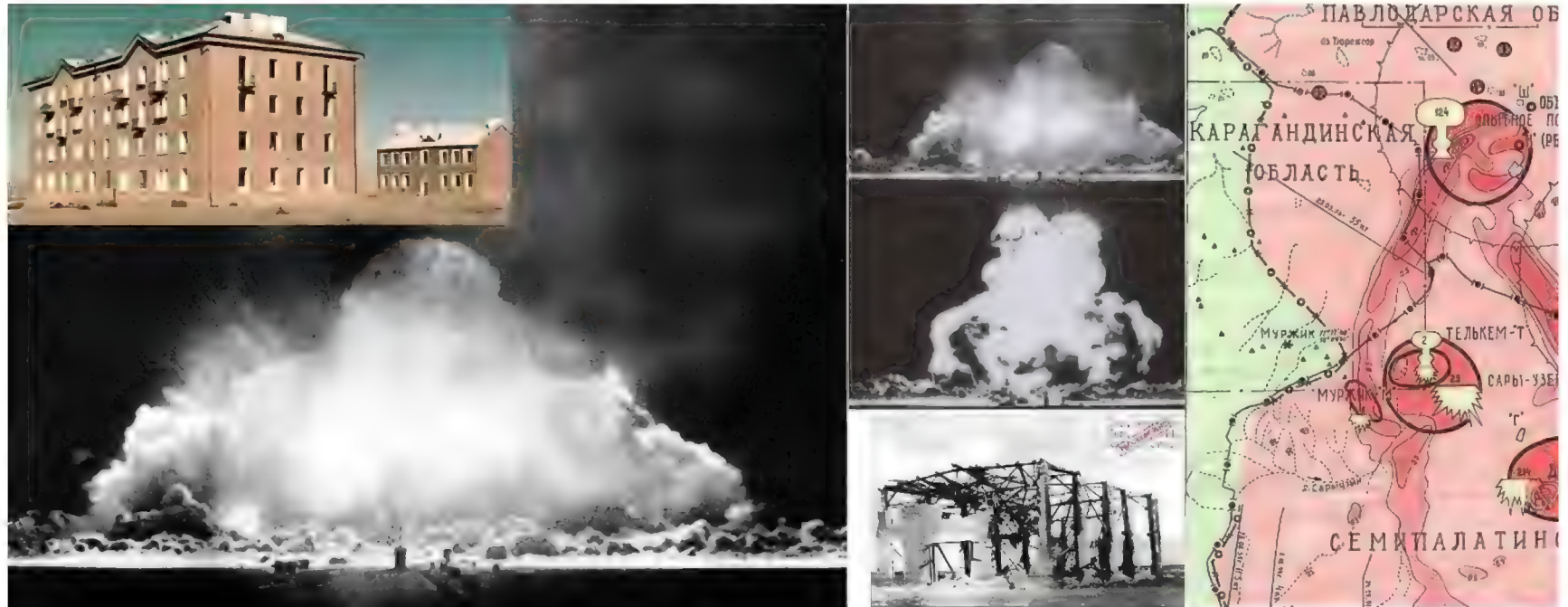


near distance  
scale to show  
the ranges to  
which different  
items were  
exposed. Tanks  
were sector 5,  
out to 2 km in  
the South-West.



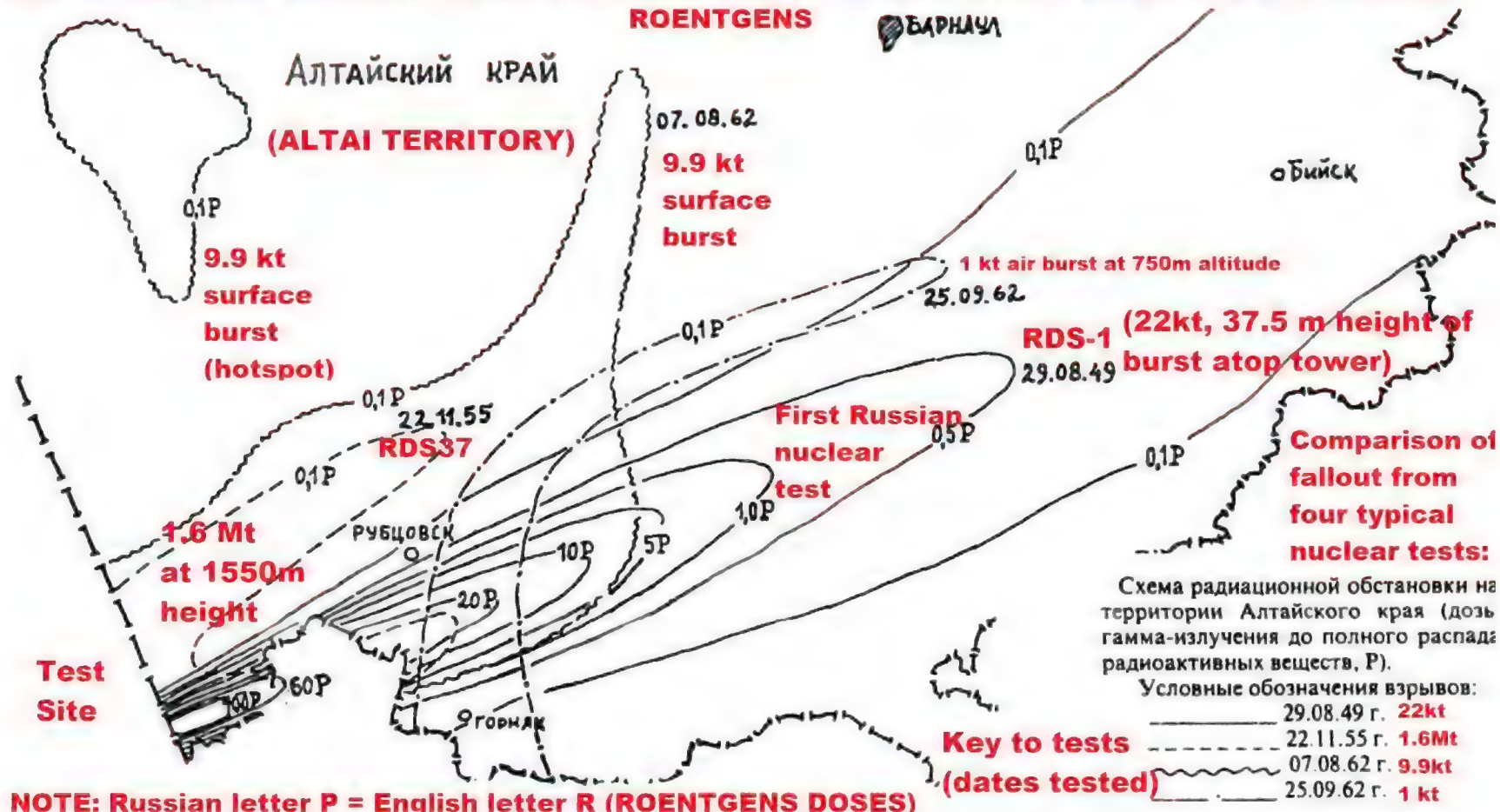
14-15 сектора – приборных сооружений.

В каждом секторе показаны дальние гра  
определения воздействия параметров ядер  
приборы, предназначенные для регистраци



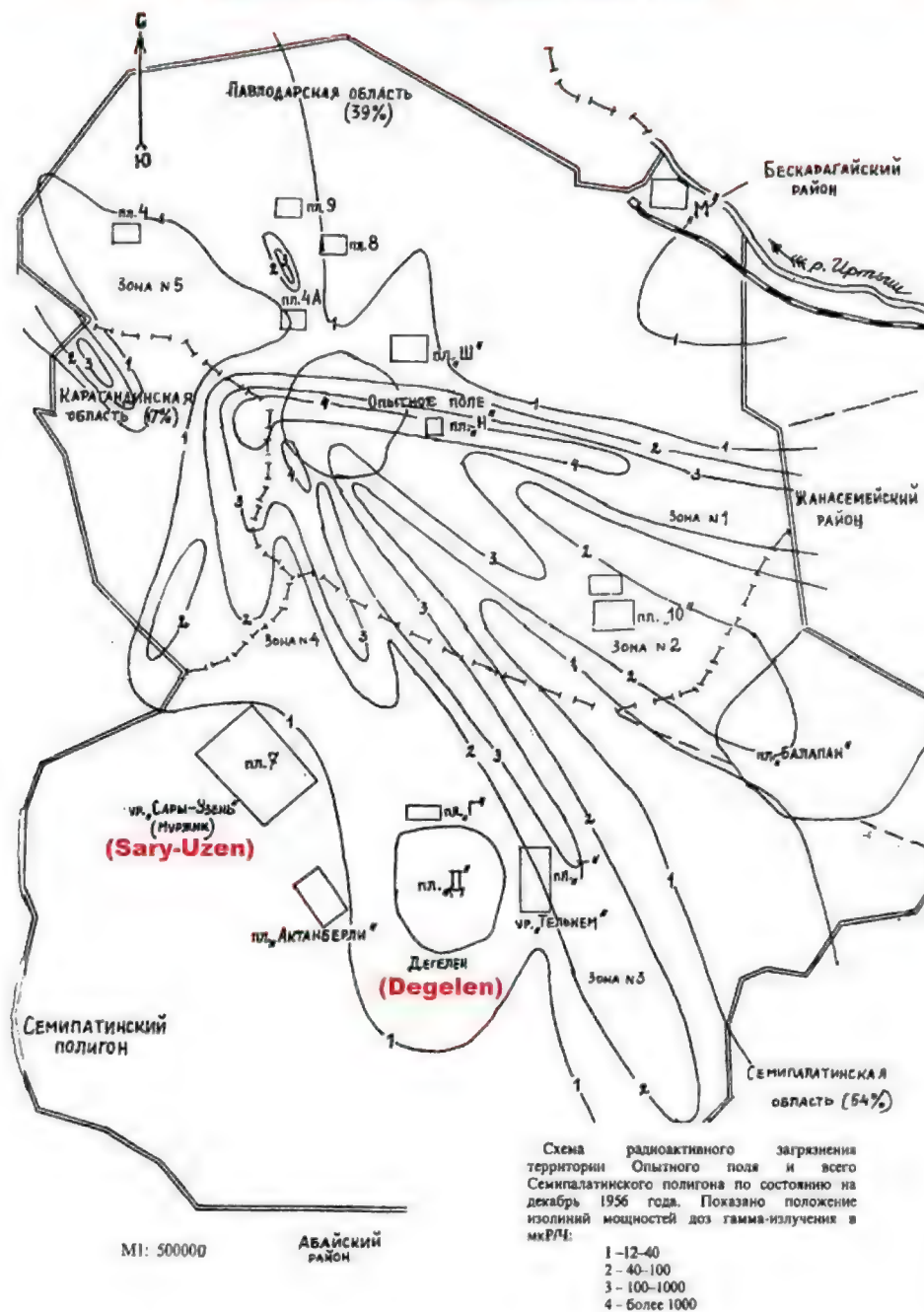


## COMPARISON OF INFINITE TIME FALLOUT GAMMA DOSES OUTDOORS FROM RDS1 AND RDS37 ROENTGENS

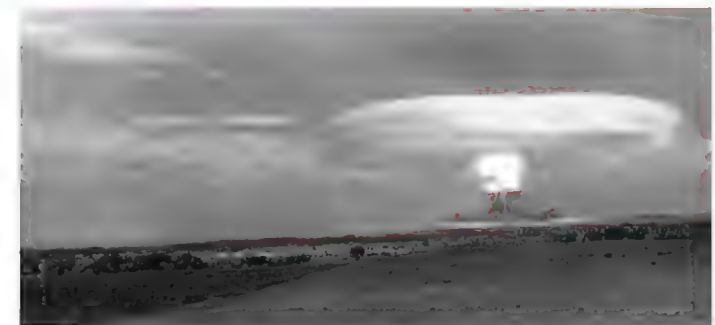




**CLOSE-IN GAMMA RADIATION (mR/HOUR) FROM ALL TESTS, DEC. 1955  
SEMIPALATINSK NUCLEAR TEST SITE**



**V. M. Loborev, et al., Assessment of radioactive contamination of the A nuclear explosions carried out at the Test Site, Final Report of the Central Institute of the Ministry of Defense Federation, 1992**





Development (1949–1952)

Chronicle - History of Rosatom

biblioatom.ru/tl/year/1949/

1949 (46)

1950 (18)

1951 (15)

1952



### By July 26, 1949

The construction and equipment of a test site for detonating the nuclear charge of the first Soviet plutonium bomb has been practically completed. In just two years, a colossal amount of work was completed, with excellent quality and at a high technical level. All materials were transported to the sites by road on dirt roads for 100-200 km. Traffic was around the clock in both winter and summer.

Numerous structures with measuring equipment, military, civil and industrial facilities were located on the experimental field to study various factors of a nuclear explosion.

In the center of the experimental field there was a metal tower 37.5 m high for the RDS-1 installation.

The experimental field was divided into 14 test sectors: two fortification sectors, a sector of civil structures, a physical sector, military samples of military equipment, and a biological sector.

Along the radii in the northeast and southeast directions at various distances from the center, instrument buildings were erected. Photochronographic, film and oscillographic equipment that recorded the processes of a nuclear explosion.

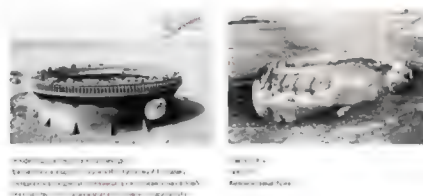
At a distance of 1000 m from the center, an underground building was built for equipment that registers light, neutron and gamma-ray explosion.

The optical and oscilloscope equipment was controlled via cables from a programmable machine.

To study the impact of a nuclear explosion, sections of subway tunnels, fragments of airfield runways, samples of aircraft, tanks, a ship superstructures of various types were built on the experimental field. It took 90 railway wagons to transport this military equipment.

To ensure the operation of the physical sector, 44 facilities and a cable network with a length of 560 km were built at the test site.


The total area of the Semipalatinsk test site was 18.5 thousand square meters. km. The total cost of setting up the test site for the first test was 185 million rubles.



ABOVE: the Russian instrumentation and target array methodology on their first nuclear test (RDS1, 22 kt on a 37.5 m high tower, 29 August 1949; **high quality declassified 1949 test photos are taken from the 2018 Sarov Nuclear Weapons Museum brochure, linked [here](#)**) was far more extensive than any Western nuclear test ever conducted, and animals were successfully used to determine the protective factors of shelters and trenches against the combined blast and radiation environment, proof testing almost the entire Russian nuclear civil defense system (it continued to do this at later tests up to and including the 1.6 megaton air burst of 22 November 1955; **see the data summary in the DTRA commissioned report *Animal Effects from Soviet Atmospheric Nuclear Tests* by the Russians V. A. Logachev and V. A. Mikhalkhina of the VNIIEF, Sarov - the protective factor of any shelter or structure is simply obtained from the ratio of the percentage of animals surviving in a structure, compared to unprotected controls - which are unfortunately lumped together for different tests with varying yields and distance ranges to avoid secrecy [here](#)**). The cost of setting up the 1949

nuclear test site with its 14 target array sectors around ground zero out to 10 km radius was 185,000,000 rubles, including a 560 km cable network which was damaged by the unexpected EMP effect. Key American nuclear test effects data on simple trench and earth covered emergency shelters is still classified secret, since it comes within the bureaucratic province of military structures. America's secret EM-1, *Capabilities of Nuclear Weapons, Chapter 15, Damage to Structures*, revised in April 1993, Tables 15.17 and 15.18 in Northrop's *unclassified* 1996 compressed book summary, states that such 6x8 ft military command post and hardened-frame/fabric personnel shelters with 4 feet of earth cover, all require 30, 50 and 60 psi peak overpressure for 50% probability of light, moderate and severe damage, respectively. Northrop's *unclassified* Table 14.1, *Combat Ineffectiveness for Personnel in an Open Two-Man Foxhole (2 x 6 x 4.5 ft) side-on the blast wave* shows 50% combat ineffectiveness at 37 psi peak overpressure for a 0.01 kt and 29 psi for yields of 0.1 kt to 1 Mt (so the clean or enhanced neutron bomb is needed for credible deterrence, not just the low-yield option on high yield dial-a-yield weapons that produce trivial neutron doses). These American nuclear test data derived statistics are similar to **T. K. Jones' figures** - discussed later in detail in this blog post - for the excellent nuclear war survival of Russian expedient blast/fallout shelters. Figure 15.62, *Basic vulnerability chart for tunnels in rock*, however, shows that tunnel shelters in granite/hard rock, with a highly deformable composite lining between the rock and the tunnel lining (**bags full of aluminium metal chips, for instance, were used by T. K. Jones to shock-protect sensitive equipment in successful tests, e.g. a motorbike driven away after surviving a peak blast overpressure of 600 psi, which would be in the crater for a surface burst and well over the peak at ground zero from the air bursts that optimised low pressure area damage to wooden houses at Hiroshima and Nagasaki**) survive at just 650 feet or 200 metres from 1 megaton yield.

DEFENSE TECHNICAL INFORMATION CENTER



A956120

DNA 5640F

1

Table 5-11. Number of warheads n

SHELTER TYPE AND TYPICAL INSTALLATION	
Wood Shelters	
USAF base	
Navy shipyard	
Army Base	
Steel Shelters	
USAF base	
Navy shipyard	
Army base	

ADA 956120

Boeing Aerospace Company  
P.O. Box 3999  
Seattle, Washington 98124

1 December 1980

DTIC ELECTE  
SEP 04 1992

CONCEPTS FOR PROTRACTED WAR

5-17 Casualty Ranges for Nuclear Weapon Effects -

Troops in Open .....191

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5-29 Launch Event Sequence .....224

For example, Figure 5-5 shows measures event to protect a minibike emplaced at the 600 range. Figure 5-6 shows the minibike being reco metal damage. In fact, it was immediately starte

Figures 5-7 and 5-8 show a grinder bein the FOAM HEST 2 (Reference 9) event which simul environments at the 900 psi (6.2 MPa) range from grinder received only superficial damage.

In almost all of these tests aluminum operations were used as the crushable material available. Foams with well-defined properties wou rial for weapon protection. Figure 5-9 shows the ing weapons with foam and soil. The thickness depend on the expected soil motion and thus on we shown are expected to protect a weapon or other it environments produced at the 1000 psi (6.9 MPa) yield of about 1 Mt. (Additional field tests woul





ABOVE: Left wing Observer aka Sunday Guardian promoting nuclear shelters on 4 July 1982. But are such shelters necessary? New research shown in this post proves that if people can simply descend to the lower floors in the attack warning period (behind tables to

shelter from window glass) or to the basements or underground car parks of modern buildings which survive radiation and blast effects far better than the wooden homes in Hiroshima in 1945 (see [diagram below from EM1](#))), the mutual shielding from the "concrete and steel jungle" in a modern city will screen out the radiation and will reduce blast wind and debris hazards. Russia has such basement shelters and tunnel shelters already in cities, as well as evacuation plans and nuclear tested expedient blast and fallout shelters for dispersing the people in a crisis. The American born Lord Chancellor of England, lawyer Lord Lyndhurst (John Singleton Copley, born in Boston, Massachusetts, in 1772) said in his House of Lords Speech, *Russia and the Crimean War* on 19 June 1854:

"The whole series of her history, from the earliest period to the present day, has been one of long-continued fraud and perfidy, of stealthy encroachment, or open and unblushing violence - a course, characteristic of a barbarous race, and whether at St Petersburg or Tobolsk, marking its Asiatic origin. To go back to the reign of the Empress Catherine, we find her policy in one striking particular corresponding with that of the present Emperor, which policy can be traced back to the Czar Peter. She ostentatiously proclaimed herself the Protector of the Greek Church in Poland, formented religious dissensions among the people, **and under pretense of putting an end to disorders which she herself had created, sent a large military force into the country ... With a like policy in the Crimea, the independence of which country had been settled by treaty, she set up a prince whom she afterwards deposed, and, amidst the confusion thus created, entered the country with an army under one of the most brutal and sanguinary of her commanders, and, having slaughtered all who opposed her, annexed this important district permanently to the Russian Empire. ... I pass over the extensive conspiracy in which Russia was engaged with Persia [IRAN] ... against this country ...** These scandalous transactions were strenuously denied by Count Nesselrode to our minister at St Petersburg, but were afterwards conclusively established by Sir Alexander Burnes and by our consul at Candahar. ...we ought not to make peace until we have destroyed the Russian fleet in the Black Sea and razed the fortifications ... That she will not remain stationary we may confidently predict. Ambition, like other passions, grows by what it feeds upon. Prince Lieven, in the despatch to Count Nesselrode, to which I before alluded, says: 'Europe contemplates with awe this colossus, whose gigantic armies wait only the signal to pour like a torrent upon her kingdoms and states'. If this semi-barbarous people, with a government of the same character, disguised under the thin cover of a showy but spurious refinement ... despotism the most coarse and degrading that every afflicted mankind - if this power with such attributes should establish itself in the heart of Europe (which may Heaven in its mercy avert!) it would be the heaviest and most fatal calamity that could fall on the civilized world." ([For complete validation of this claim a century later, see WWII nuclear war threat of Khrushchev, made even before Russia had a nuclear superiority, in 1959 - linked below - and Eisenhower's autistic mimicry of Chamberlain's autistic appeasement of Hitler for "peace" on 30 sept '38! The situation is far worse now because there really is a missiles, tactical nuclear weapons, nuclear warhead designs "implementation gap" today in which we are behind, which makes Russian threats credible, unlike 1959!](#))



Your generals talk of maintaining your position in Berlin with force. That is bluff. If you send in tanks, they will burn and make no mistake about it. If you want war, you can have it, but remember, it will be your war.

Khrushchev, June 23, 1959

Q: What do you think of talk such as this?

THE PRESIDENT: Well, I don't think anything about it at all. I don't believe that responsible people should indulge in anything that can be even remotely considered ultimatums or threats. That is not the way to reach peaceful solutions.

**(TEXTBOOK AUTISM)**

Eisenhower, July 8, 1959

*Khrushchev power by re his predeces anti-war ag instead usir style blackn deter Ameri opposing its of Eastern E Eisenhower Chamberlai mindset, rej prepare she wanting to*

**50% PROBABILITY OF SEVERE DAMAGE (COLLAPSE) FOR CITY BUILDINGS  
(SOURCE: NORTHROP, EM-1 NUCLEAR WEAPON EFFECTS HANDBOOK, 1996,  
TABLE 15.6, AND FIGURES 15.10, 15.18, SURFACE BURSTS)**

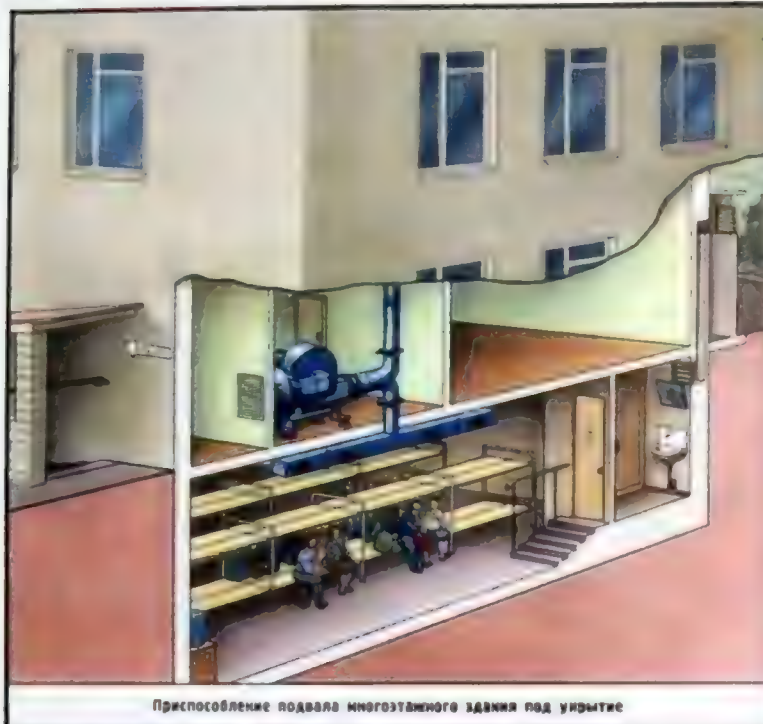
STRUCTURE	BUILDING VALUES (NOMINAL)			Peak overpressure (psi)	
	Oscillation Period (ms)	Static yield resistance (psi)	Ductility ratio (u)	20 KT	1MT
15.2.2, 3-8 Story Reinforced Concrete Building (Concrete Walls)	300	3.0	7.5	15	12
15.2.10, 3-10 Story Steel Frame Building	600	2.0	10	23	13

**THE ORIGINAL SECRET EM-1 SHOWS THAT MODERN CITY BUILDINGS REQUIRE FAR HIGHER PEAK OVERPRESSURES EVEN AT MEGATON YIELDS, THAN THE WOODEN HOUSES IN HIROSHIMA FOR COLLAPSE**



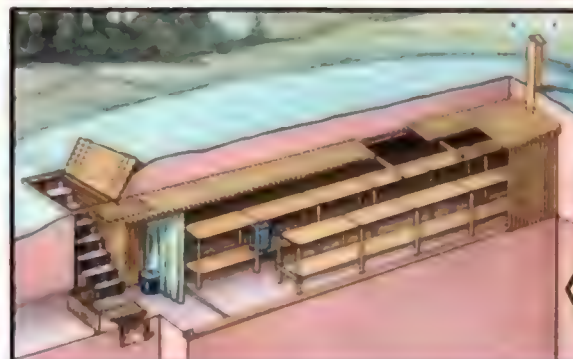
# ПРОТИВОРАДИАЦИОННЫЕ УКРЫТИЯ

Противорадиационные укрытия защищают людей от радиоактивного и светового излучения, ослабляют воздействие ударной волны ядерного взрыва



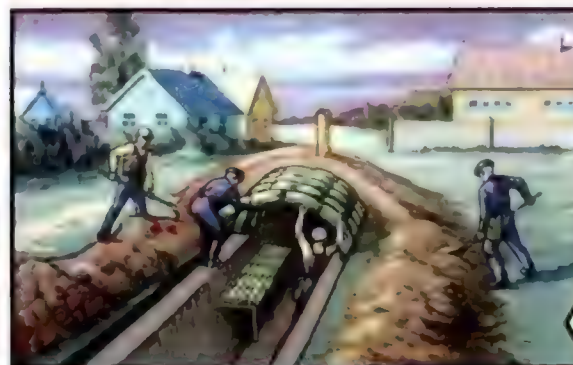
Приспособление подвала одноэтажного здания под укрытие

Укрытие с перекрытием из железобетонных плит



Приспособление подвала одноэтажного здания под укрытие

Укрытие из тонких бревен или жердей



Приспособление подвала одноэтажного здания под укрытие

Устройство укрытия из арочных хворостяных или камышовых фашин

Каждый должен знать, где расположены ближайшие противорадиационные укрытия по месту работы или жительства.

Hard basement shelters in target cities.

Simpler fallout shelters in ru



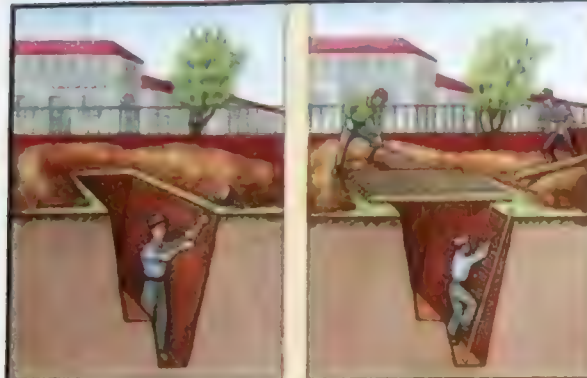
Государственная оборона СССР. Инструкция № 10. Шахматов. 1964 г. 5



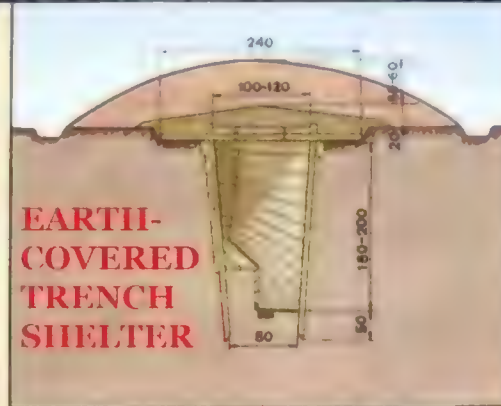
# ПРОСТЕЙШИЕ УКРЫТИЯ И БЫСТРОВОЗВОДИМЫЕ УБЕЖИЩА С УПРОЩЕННЫМ ОБОРУДОВАНИЕМ

## ПРОСТЕЙШИЕ УКРЫТИЯ

Простейшие укрытия защищают людей от воздействия светового излучения и ослабляют воздействие ударной волны и проникающей радиации.



Строительство перенрывной щели производится в такой последовательности: сначала она отрыгивается и оборудуется, затем черенкуется.

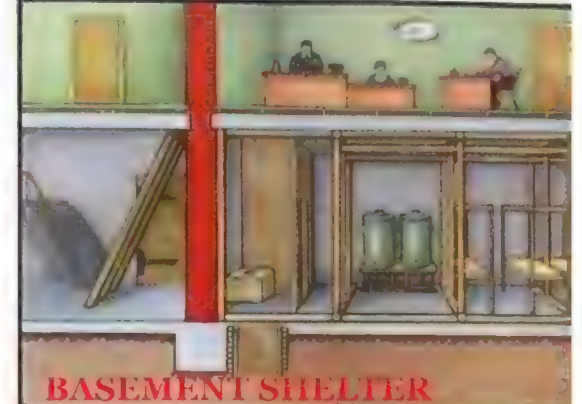


**EARTH-COVERED TRENCH SHELTER**

Перенрывная щель с одеждой стен

## БЫСТРОВОЗВОДИМЫЕ УБЕЖИЩА С УПРОЩЕННЫМ ОБОРУДОВАНИЕМ

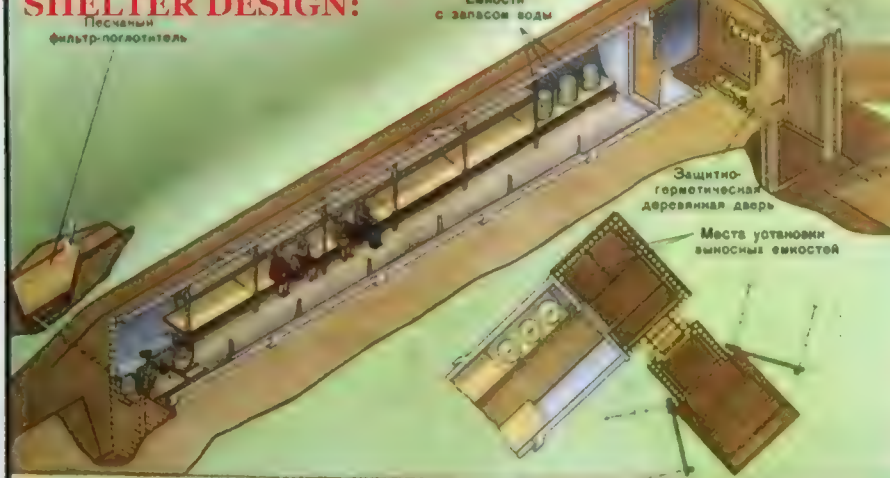
Быстровозводимые убежища с упрощенным оборудованием защищают людей от воздействия факторов оружия массового поражения.



**BASEMENT SHELTER**

Приспособление подвала административного здания

## ПРЕФАБРИКАЦИРОВАННАЯ ТРУБНАЯ СИСТЕМА УБЕЖИЩА:



Быстровозводимое убежище из железобетонных труб большого диаметра



**UNDERROAD PEDESTRIAN CROSSING SUBWAY SHELTERS WITH REINFORCED CONCRETE SLAB ROOFS**

Приспособление подземного перехода под быстровозводимое убежище

Каждый должен уметь строить простейшие укрытия и быстровозводимые убежища.

Министерство обороны СССР  
Инструкция № 10  
Шахматов  
1964 г.

Инструкция № 10  
Шахматов  
1964 г.







## РАССРЕДОТОЧЕНИЕ И ЭВАКУАЦИЯ НАСЕЛЕНИЯ

РАССРЕДОТОЧЕНИЕ И ЭВАКУАЦИЯ – ЭТО ОРГАНИЗОВАННЫЙ ВЫВОД И ВЫВОЗ НАСЕЛЕНИЯ ИЗ ГОРОДОВ И РАЗМЕЩЕНИЕ ЕГО В ЗАГОРОДНОЙ ЗОНЕ, ПРОВОДИМЫЕ В ПЕРИОД УГРОЗЫ НАПАДЕНИЯ ПРОТИВНИКА, С ЦЕЛЬЮ СНИЖЕНИЯ ПОТЕРЬ СРЕДИ НАСЕЛЕНИЯ В СЛУЧАЕ ПРИМЕНЕНИЯ ПРОТИВНИКОМ ОРУЖИЯ МАССОВОГО ПОРАЖЕНИЯ.

РАССРЕДОТОЧЕНИЕ И ЭВАКУАЦИЯ ПРОВОДЯТСЯ В КРАТЧАЙШИЕ СРОКИ КОМБИНИРОВАННЫМ СПОСОБОМ С ИСПОЛЬЗОВАНИЕМ ВСЕХ ВИДОВ

**= Evacuation and dispersal of the**

ТРАНСПОРТА, НЕ ЗАНЯТОГО ВОЕННЫМИ И СЛУЖЕБНЫМИ И ХОЗЯЙСТВЕННЫМИ ПЕРЕВОЗОМ. РАССРЕДОТОЧЕНИЕ И ЭВАКУАЦИЯ РАБОЧИХ И СЕМЕЙ ОСУЩЕСТВЛЯЕТСЯ ПО ПРОИЗВОДСТВЕННОМУ ПРИНЦИПУ НАСЕЛЕНИЯ, НЕ ЗАНЯТОГО НА ПРОИЗВОДСТВЕ ПО ТЕРРИТОРИАЛЬНОМУ ПРИНЦИПУ (ПО РАЙОНАМ РАВЛЕНИЯМИ И ЖИЛИЩНО-ЭКСПЛУАТАЦИОННЫМ). ОБЫЧНО ЭВАКУИРУЮТСЯ ВМЕСТЕ С РОДИТЕЛЯМИ.



СОКРАЩЕНИЯ НА СХЕМЕ

СЭП – сборный эвакуационный пункт, ПЭП – приемный эвакуационный пункт, ПП – пункт посадки

**KEY WORKERS ARE NOT IN SHELTERS IN CITIES ARE**





Гражданская оборона СССР. Матрица из 10 листов. Лист № 9



# ЭВАКУАЦИЯ НАСЕЛЕНИЯ

Эвакуацией населения называется организованный вывоз (вывод) населения из городов, населенных пунктов в загородную зону в случае угрозы применения противником оружия массового поражения. Эвакуации подлежат также население, проживающее в зонах возможного затопления. Для подготовки и проведения мероприятий по эвакуации населения в городах, районах и на объектах народного хозяйства создаются эвакуационные комиссии, в загородной зоне — эвакуационные пункты.

## =RUSSIAN EVACUATION PLANS TO NEGATE ENEMY NUCLEAR THREATS

ные комиссии. Для отправки эвакуируемого населения в городах создаются пункты, а в загородной зоне для приема и размещения эвакуируемого населения — эвакуационные пункты.

О начале эвакуации население оповещается администрацией предприятий, учебных заведений и ЖЭН.



Получив распоряжение на эвакуацию, каждый должен взять с собой средства индивидуальной защиты, личные вещи, документы, запас продуктов, воды и медикаменты.



В установленное время эвакуируемое население городским транспортом или пешком по порядку самостоятельно прибывает на сборный эвакуационный пункт.



На сборном эвакуационном пункте население проходит регистрацию и распределяется по пешим колоннам или транспортным эшелонам.



Население в составе

### Население вывозится всеми видами транспорта:



автомобильный



железнодорожный



водный



В загородной зоне по населенным пунктам

При проведении эвакуации население должно четко выполнять распоряжения местных органов власти, администрации сборных и приемных эвакуационных органов, начальников эшелонов и колонн.

Составитель: [illegible]  
 Автор: [illegible]  
 Редактор: [illegible]  
 Корректор: [illegible]

Рисунки: [illegible]  
 Мелкие рисунки: [illegible]  
 Дизайн: [illegible]



ПРИБОР ПРЕДНАЗНАЧЕН ДЛЯ ИЗМЕРЕНИЯ УРОВНЕЙ ГАММА-РАДИАЦИИ НА МЕСТНОСТИ И РАДИОАКТИВНОЙ ЗАРАЖЕННОСТИ ПО ГАММА-ИЗЛУЧЕНИЮ ЛЮДЕЙ, ПРОДОВОЛЬСТВИЯ, ВОДЫ, ТЕХНИКИ, ОДЕЖДЫ И ДР.

## RUSSIAN DP-5V RADIAC (GEIGER BOTH GAMMA SURVEY METER AND DETECTING FOOD/WATER CONTA

### УСТРОЙСТВО ПРИБОРА

1. Телефоны 2. Футляр с крышкой 3. Тумблер подсвета шкалы микроамперметра 4. Шкала микроамперметра 5. Кнопка сброса показаний микроамперметра 6. Переключатель поддиапазонов 7. Гибкий кабель 8. Блок детектирования 9. Удлинительная штанга

**HEADPHONES  
(FOR GEIGER  
CLICKING SOUND)**

**2 - ROTATE  
BETA SHIELD  
ON PROBE**

**9 = EXTENSIBLE PROBE POLE**

**POWERED BY THREE KB-1 BATTERIES  
FOR 55 HOURS. WEIGHT = 3.2 KG.**

УСТРОЙ

1. Повор  
4. Опор  
6. Гайка

**0.05 п**

ТЕХНИЧЕ

ДП-5В  
теристич  
Диапазон  
нию от  
имеет 6  
са при  
ется от  
Комплек  
ную раб  
бор им  
для под  
постоян  
24 В





ABOVE: 10,000 marched to shout "STOP HITLER" while Chamberlain surrendered Sudetenland for a worthless peace deal. Neither the

shouting, nor the "peace deal", nor belated token rearmament, deterred WW2. In the cold war, strategic nuclear deterrence failed time and again: Stalin took over Eastern Europe while Truman had a nuclear monopoly. Only credible tactical nuclear weapons had any effect, judging from protests the Moscow World Peace Council organized across the world against the W79 neutron bomb (see [1977 Secret CIA report on neutron bomb propaganda, below](#) and John Barron's "KGB's Magical War for Peace" book extracts in Reader's Digest below, or see Chapman Pincher's book documenting how Moscow's World Peace Council infiltrated anti-nuclear propaganda via stupid appealing Western media, "The Secret Offensive") - you need credible nuclear deterrence to force madmen not just listen but to respond usefully.

Approved For Release 2004/09/24 : CIA-RDP81M00980R003200010060-0

**CIA declassified: CIA-RDP81M00980R003200010060-0**

2 September 1977

#### SOVIET PROPAGANDA: THE NEUTRON BOMB

**SUMMARY:** The Soviet Union during July and August 1977 mounted a worldwide campaign against U.S. production of the neutron bomb. The Soviets pursued this issue in every media channel and wherever it was possible to stimulate adverse public discussion. These efforts were directed toward pressuring the U.S. to back away from producing the bomb as well as accumulating political capital for Soviet use at future SALT and CSCE talks. As the campaign peaked at the end of August, it was apparent

denouncing the neutron bomb. During the week of 1-7 August, significant attention was directed toward support of the "Week of Action" organized for 6-13 August by the World Peace Council front group. To keep up steam, Pravda on 9 August published an appeal by 28 communist parties against production of the neutron bomb. The American Embassy in Moscow noted that the neutron bomb was the prime Soviet propaganda target.

7. Echoes in Eastern Europe. State Department telegrams from East European Posts agree that the neutron bomb campaign there, which took off in the latter weeks of July, was passive, well-organized and faithfully mirrored the Soviet effort. The campaign employed all channels of public communication: press, radio, television, petitions, public letter writing and demonstrations. Some comments:

10. For the Soviets, the real propaganda paydirt lay in editorial treatment given the neutron bomb by this second group, a performance judged by NATO Secretary General Luns in a 26 August speech as consisting of half-truths, untruths and ignorance. Given the emotional themes which were raised in the neutron bomb debate—saving buildings rather than people; the hypocrisy of Americans advocating human rights in face of the bomb production; the endangering of detente—it was an old-fashion editorial binge which many papers would not deny themselves. And beyond the non-communist, anti-bomb press,

**SECRET**

Approved For Release 2004/09/24 : CIA-RDP81M00980R003200010060-0

## The KGB's Magical War for "Peace"

BY JOHN BARRON

It has spread like a raging fever throughout the world. From Bonn to Istanbul, Lima to New York, millions upon millions of people have joined in the nuclear-freeze movement. It is a movement largely made up of patriotic, sensible people who earnestly believe that they are doing what they must to prevent nuclear war. But it is also a movement that has been penetrated, manipulated and distorted to an amazing degree by people who have but one aim—to promote communist tyranny by weakening the United States. Here, in an exclusive report, Reader's Digest Senior Editor John Barron, author of the best-seller "KGB: The Secret Work of Soviet Secret Agents," authenticates in detail how the Kremlin, through secrecy, forgery, terrorism and fear, has played upon mankind's longing for peace to further its own strategic

#### Fabrications and Fronts

IN THE SOVIET LEXICON, Active Measures include both overt and covert propaganda, manipulation of international front organizations, forgeries, fabrications and deceptions, acts of sabotage or terrorism committed for psychological effect, and the use of Agents of Influence.\*

The KGB has concocted more than 150 forgeries of official U.S. documents and correspondence portraying American leaders as treacherous and the United States as an unreliable, warmongering na-

tional state. One of the most damaging was a fabrication titled *U.S. Army Field Manual FM30-31B* and classified, by the KGB, top secret. Field manuals *FM30-31* and *FM30-31A* did exist; *FM30-31B* was entirely a Soviet creation. Over the forged signature of Gen. William Westmoreland, the manual detailed procedures to be followed by U.S. military personnel in friendly foreign countries. These fictitious in-

#### Façade of Peace

THE WORLD PEACE COUNCIL emerged in Paris in 1950 to foment "Ban the Bomb" propaganda at a time when the Soviets had not succeeded in arming themselves with nuclear weapons. Expelled from France for subversion in 1951, the WPC took refuge in Prague until 1954, when it moved to Vienna. The Austrians also evicted the



Romesh Chandra

the global proda campaign pel withdraw American from Vietnam

The presi the council is communist l Chandra, wh has been a co and witting agent. Intel

vain and arrogant, Chai almost embarrassing in his adherence to Soviet dictates paeans to all things Soviet Union invariably s the peace movement." C said a few years ago. "The Peace Council in its turn p reacts to all Soviet initiat international affairs."

Nevertheless, the Russi pervise Chandra closely by ing both International Dep and KGB representatives to t manent secretariat of the Helsinki. The public recor demonstrates the totality o control. In its 32 years of ex the WPC has not deviated fr Kremlin's line of the mon did not raise its voice agains suppression of Polish and E

man workers in 1953, slaughter of Hungarians i Soviet abrogation of the r test moratorium in 1961, tl destine emplacement of missiles in Cuba in 1962, th sion of Czechoslovakia ii the projection of Soviet r power in Angola, Ethiop Yemen. The WPC has fa criticize a single Soviet arm program; only those of the And it endorsed the Sovie sion of Afghanistan.

WPC finances further refi viet control. I

**READERS' DIGEST, 1983 BOOK  
EXTRACTS BY JOHN BARRON**



## WASHINGTON SCENE...from the AIAA Washington

ASTRONAUTICS & AERONAUTICS  
January 1981

● CIA Deputy Director John McMahon, in testimony before a House Intelligence Subcommittee, estimated that the Soviet Union had spent \$200 million on propaganda and covert campaigns against NATO deployment of enhanced-radiation (neutron-bomb) weapons and the modernization of theater nuclear weapons.

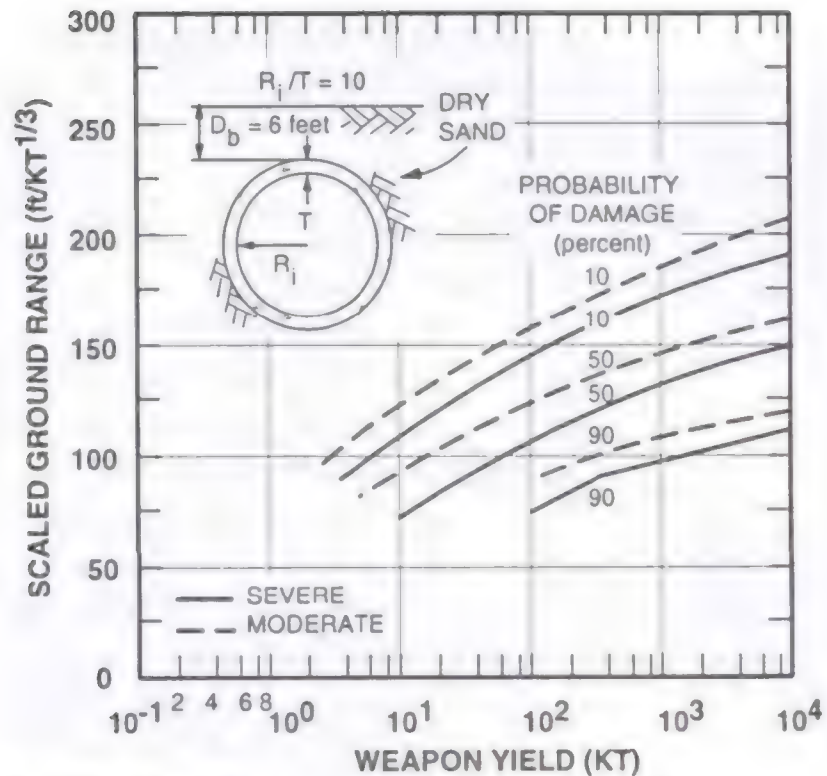
Enhanced radiation weapons (ERW) increase radiation while greatly reducing blast (tenfold) and heat damage to surrounding areas. Made for use in short-range, tactical nuclear weapons such as the Lance missile and 8-in. howitzer, they would probably be used against large concentrations of Warsaw Pact tanks, a major threat to NATO.

The campaign against the neutron bomb began in the summer of 1977 and was manifested in a series of coordinated diplomatic moves, overt propaganda, and covert political action, said McMahon. It began in the Soviet and East European press and spread to communist international front groups all over the world. "The purpose of this front-group activity was to maintain the campaign's momentum and to draw noncommunists into the campaign, particularly in Western Europe. What had begun as a Soviet effort now appeared to many as a general public reaction to the alleged horrors of the neutron bomb," said McMahon.

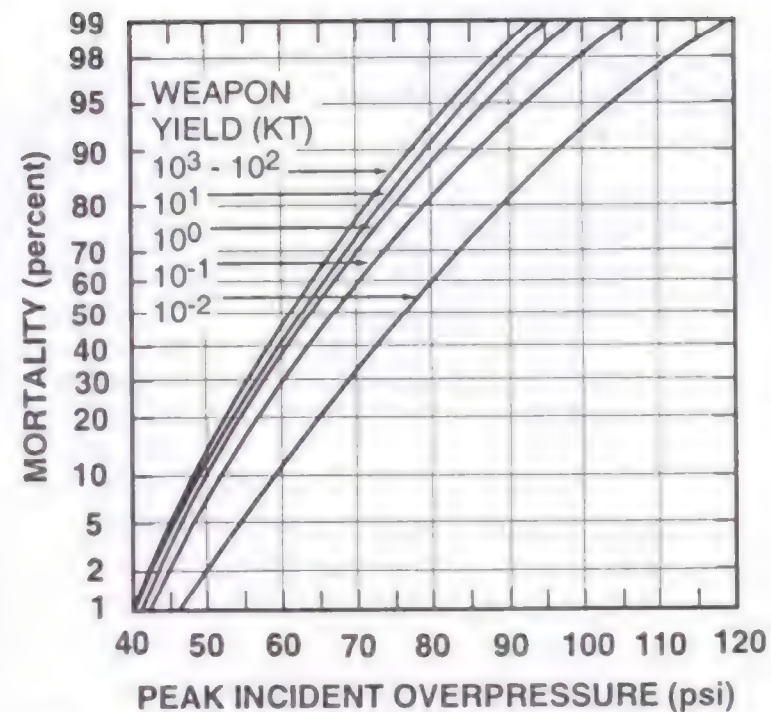
By far the most important comments, said McMahon, appeared in the noncommunist press in the political center

While it is difficult to assess the full impact of the anti-neutron-bomb campaign, the Carter Administration in April of 1978 deferred production of the enhanced-radiation element of the warheads indefinitely while proceeding with modifications to the warheads themselves to make them compatible with ER components. In commenting on the results of the Soviet bloc campaign, the CIA testimony quoted the chief of the International Department of the Hungarian Communist Party, Janos Berecz, as saying, "The political campaign against the neutron bomb was one of the most significant and most successful since World War II." McMahon also noted that "the Soviet Ambassador to the Hague (Netherlands) at that time was subsequently decorated by the CPSU (Communist Party of the Soviet Union) in recognition of the success of the Dutch Communist Party under his direction, in organizing the high point of the anti-neutron bomb campaign."

With the neutron bomb temporarily defused, testified McMahon, the Soviet Bloc turned its efforts against the U.S. initiated move to modernize the theater nuclear forces (TNF) by deploying the highly accurate ground-launched cruise missile (GLCM) and the Pershing II missile. Scheduled for deployment in late 1983, they will, for the first time, place targets on Soviet soil within range of NATO ground-based missiles. The purpose of the modernization is to minimize the



**Figure 15.52.** Vulnerability Curves for a Horizontal Cylinder, Aspect Ratio  $R_i/T = 10$  (Structure Category 15.3.18) Buried in Dry Sand.



**Figure 14.3.** Mortality Due to Lung Injury; Long Axis of Body Parallel to Direction of Blast Wave.

**SOURCE: NORTHROP, EM-1, 1996**





# ПРОТИВОРАДИАЦИОННЫЕ УКРЫТИЯ

(ПРОДОЛЖЕНИЕ)

Население при угрозе нападения противника может своими силами строить из подручных материалов укрытия.



Щель



Землянка



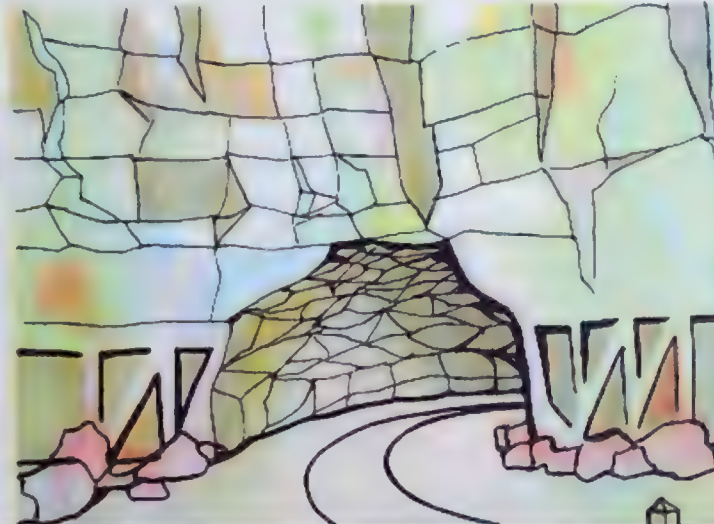
Укрытие из арочных фашин



Укрытие

Простейшие укрытия типа щели с одеждой кругостей ослабляют действие радиации в 100—200 раз, уменьшают радиус поражения от ударной волны и т.д.

В районах горнодобывающей и угольной промышленности под укрытия могут быть использованы выработки по добыче строительных материалов, катакомбы, пещеры и др.







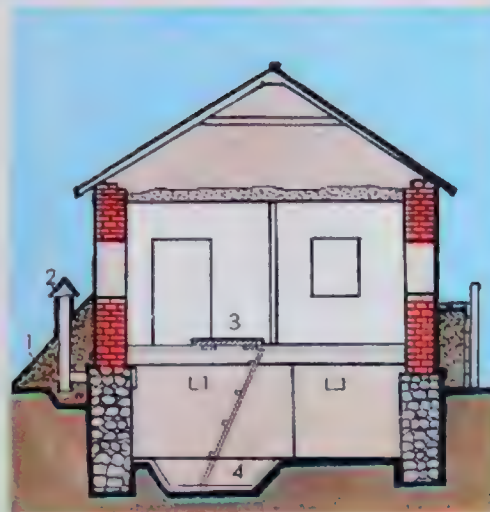


# ПРОТИВОРАДИАЦИОННЫЕ УКРЫТИЯ

Противорадиационными укрытиями называют сооружения, обеспечивающие защиту укрывающихся в них людей от заражения радиоактивными веществами и от облучения в зоне радиоактивного заражения местности.

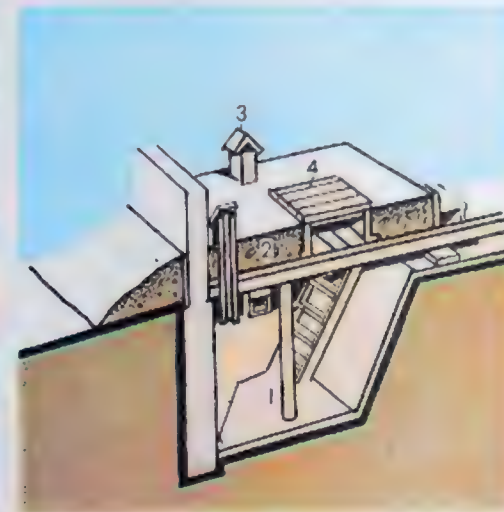
Под противорадиационные укрытия могут быть широко использованы приспособленные для защиты подвалы, подполья, погреба и другие углубления. Кроме того, укрытия могут возводиться с использованием лесоматериала, кирпича, бетонных и железобетонных элементов. В сельской местности укрытия строят из подручных материалов (круглый лес, жерди, хворост, камыш и др.).

ПРИСПОСОБЛЕННЫЕ ПОД УКРЫТИЯ ХОЗЯЙСТВЕННЫЕ СООРУЖЕНИЯ



Подвал каменного дома, приспособленный под укрытие:

1 — обсыпка грунтом; 2 — вытяжной короб; 3 — герметизированный люк; 4 — углубленный приямок



Приспособление подполья под укрытие:

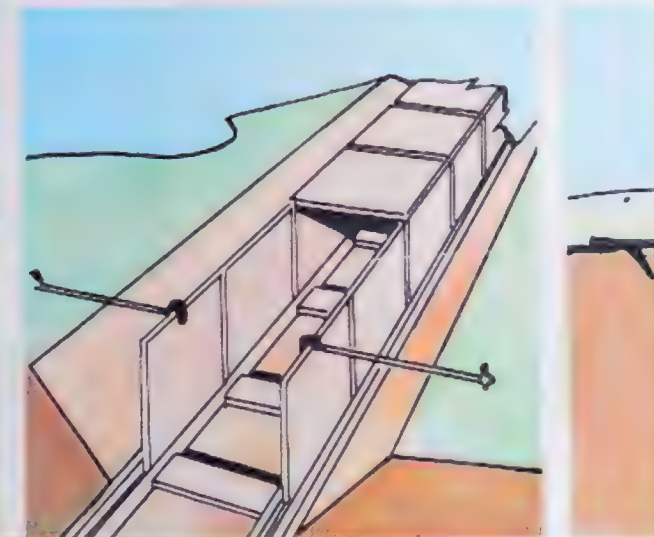
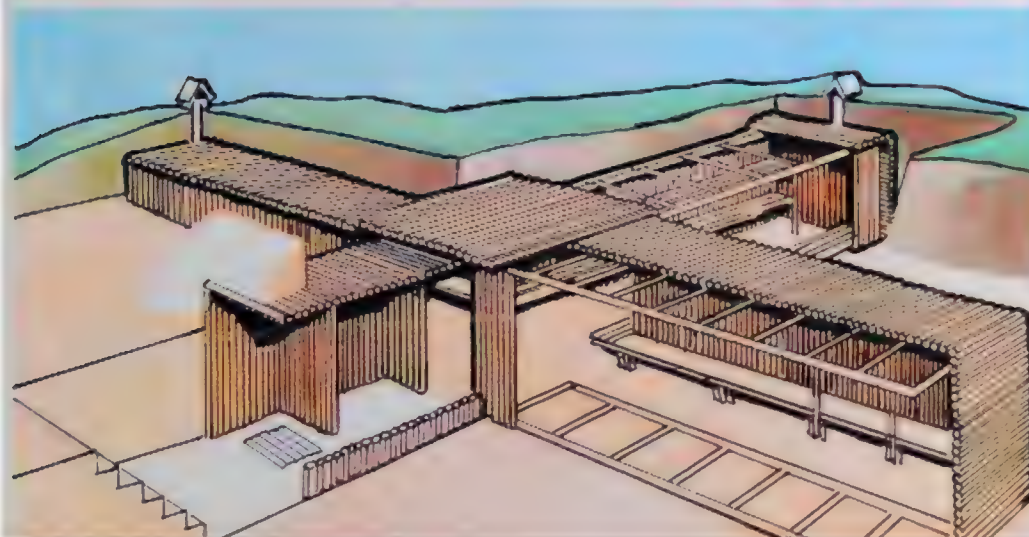
1 — стойка усиления перекрытия; 2 — грунтовая засыпка; 3 — вентиляционный короб; 4 — дополнительная крышка люка



Отдельное под укрытие

1 — места (шлаком) 20 верстие для п

СТРОИТЕЛЬСТВО УКРЫТИЙ ИЗ ЛЕСОМАТЕРИАЛА И ЖЕЛЕЗОБЕТОННЫХ ЭЛЕМЕНТОВ



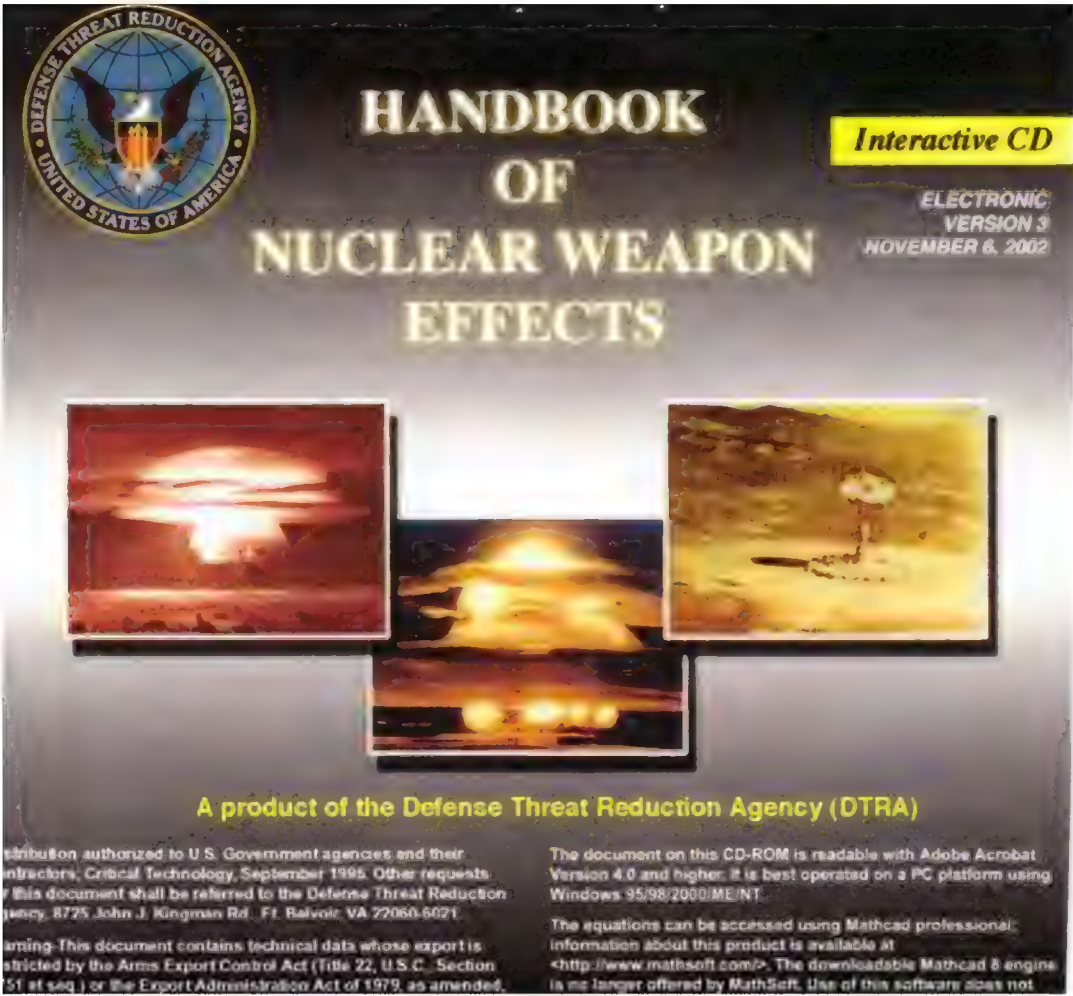


Table 15.17. Command Post and Vulnerability Levels for Peak O

PERCENT PROBABILITY OF DAMAGE	LEV
	LIGHT M
10	20
50	30
90	45

Table 15.18. Hardened Frame/F Vulnerability Levels for Peak O

PERCENT PROBABILITY OF DAMAGE	LEV
	LIGHT I
10	20
50	30
90	45

EXPEDIENT FIELD SHELTERS:

ABOVE: Northrop's Effects Manual 1 (EM1), Tables 15.17 and 15.18 show that simple earth covered expedient shelters have a 50% probability of collapsing at 60 psi peak overpressure, which occurs at just 0.8 mile from a 1 megaton surface burst, but [Figure 15.52 \(linked here\)](#) shows that a simple reinforced concrete tube use as a shelter (concrete stress strength = 4500 psi, with a thickness equal to 10% of the inner radius of the tube) buried under 6 feet of dry or wet soil (note that the curves for wet soil in Figure 15.55 are similar for severe damage at 1 megaton to dry soil in Figure 15.52) has a 50% probability of collapse at 0.3 mile from a 1 megaton surface burst. (The eight deep personnel shelters under London at are much greater depths than 6 feet.) According to Table 6.12 in the 1957 edition of Glasstone's *Effects of Nuclear Weapons*, Britain's 1939-designed World War Two standard issue corrugated steel arch outdoor Anderson shelters if enlarged to 20-25 feet span (which increases vulnerability, since smaller arches have a

*smaller exposed area and so receive lower blast loading*) and using 10 gage steel with 3 feet earth cover (over the crown), will half collapse (i.e. collapse the side facing ground zero) at 30-35 psi peak overpressure, and will completely collapse at 35-40 psi peak overpressure, based on the 1955 Teapot nuclear test series in Nevada. However, following careful nuclear tests on such shelters during the 1957 Plumbbob series in the Nevada and the 1958 Hardtack series in the Pacific, the "earth arching" protective effect of soil cover was discovered and better understood, so that Glasstone's revised 1962 edition of *Effects of Nuclear Weapons* stated in Table 4.45 (which is reprinted unaltered as Table 5.160 in the 1977 final edition of *Effects of Nuclear Weapons*) that such shelters with 5 ft earth cover require 45-60 psi peak overpressure for collapse. This revised table also shows that a reinforced concrete arch 8 inches thick with a span of 16 feet and 4 feet of earth cover will require 220-280 psi peak overpressure for collapse. The earth arching and earth shielding effect is the simple, nuclear bomb-tested survival principle behind Cresson Kearny's 1979 Oak Ridge National Laboratory manual, *Nuclear War Survival Skills*, and the **UK government's 1982 Domestic Nuclear Shelters - Technical Guidance 2nd edition (extracts linked here with additional detailed relevant nuclear test data, see illustrations below for the 1982 version of the earth covered 1939 WW2 Anderson shelter - based on data from American and British nuclear tests, from the 1952 Monte Bello Operation Hurricane shot onwards).**

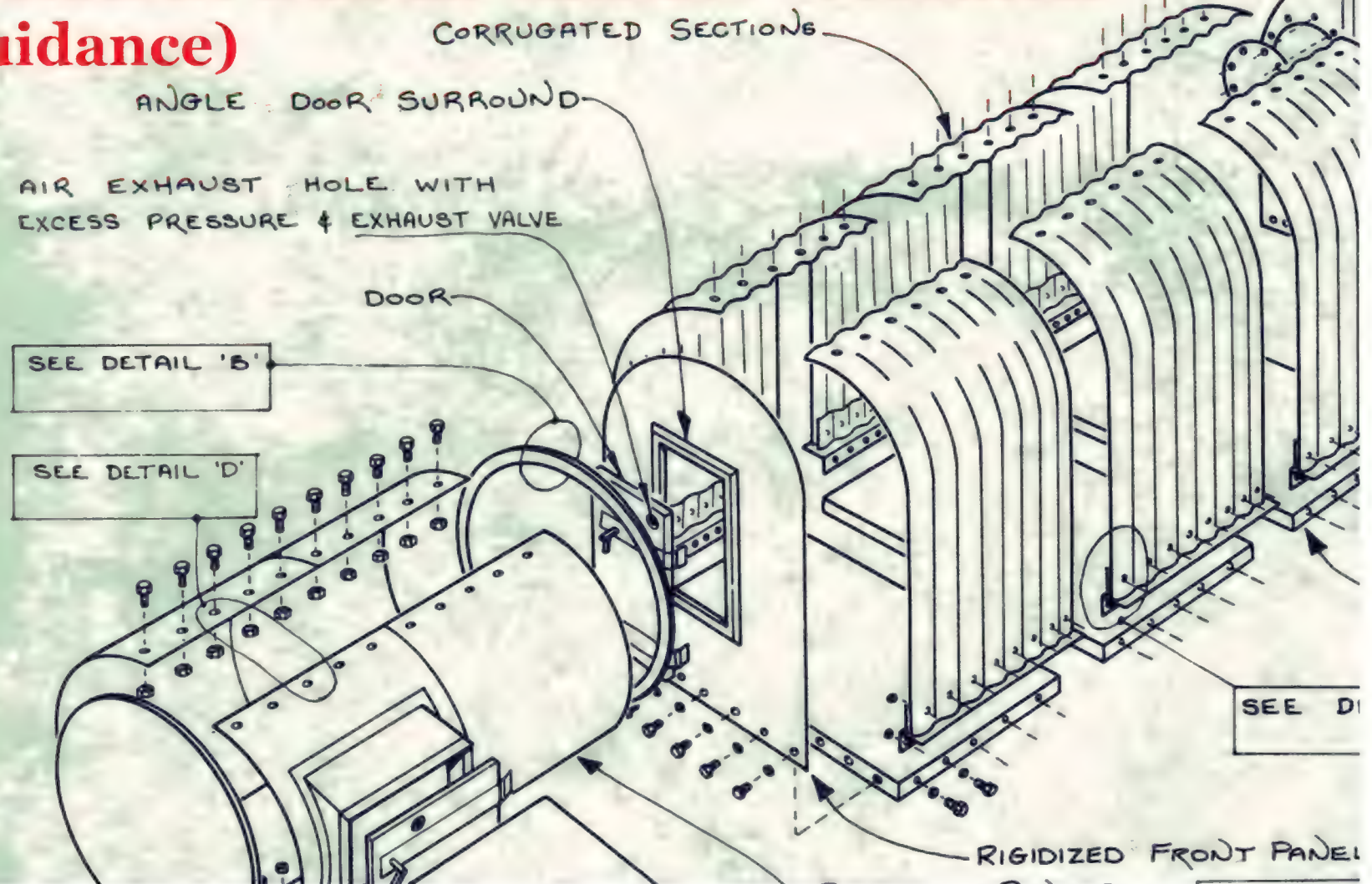




**Fig. 86** Construction and installation drawings  
for outdoor kit shelter design.

**1982 Anderson shelter**

# (Domestic Nuclear Shelters - Technical Guidance)









**Fig. 92**

# UK Government 1982 Anderson

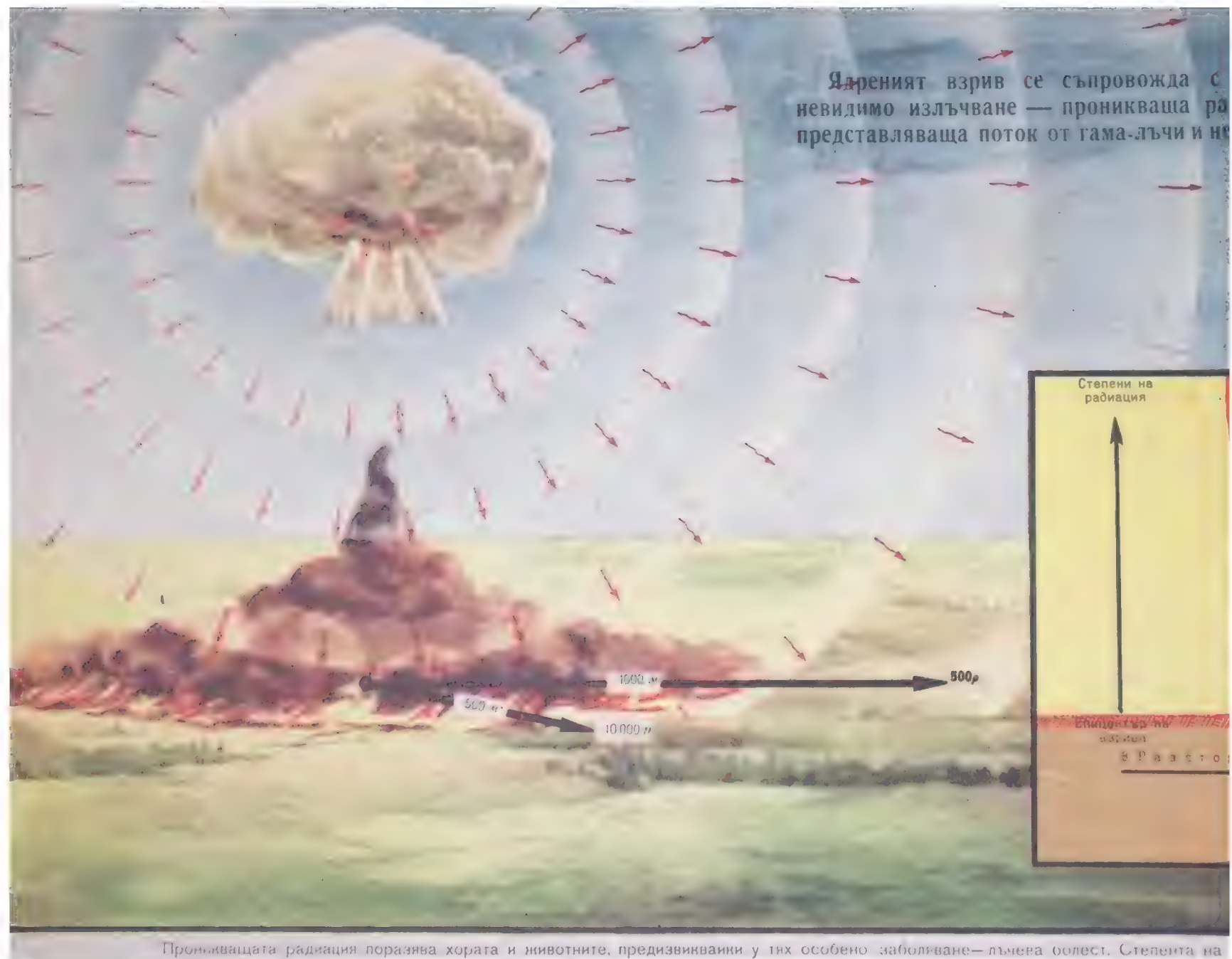
Concrete Slab 150 m.m. thick with  
One layer of mesh B.S. ref. A.142  
placed centrally



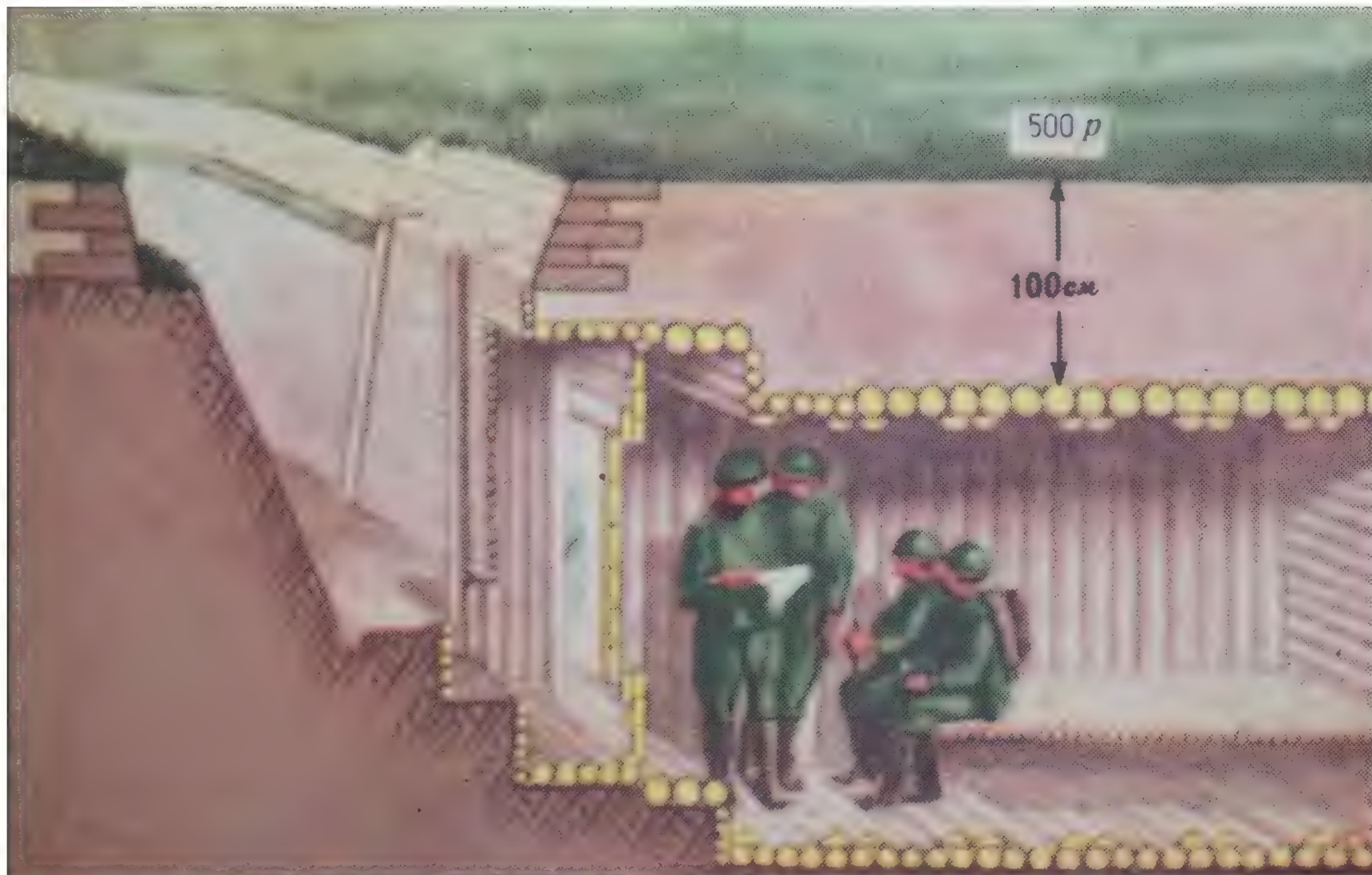
**(Domestic  
Shelters  
Guidance)**

turned up to lap with sneller.

TYPICAL CROSS SECTION : (FLAT BOTTOM)







## ORIGINAL



Стените на откритите отбранителни съоръжения почти напълно поглъщат прекия поток на проникващата радиация, и в повечето случаи в окопите, траншеите и счелите прониква само разсеяното излъчване. Дозата на излъчване с увеличаване дълбочината на съоръженията рязко намалява. Така на половината от дълбочината на траншеята дозата примерно с 2.5 пъти, а на дъното — с 10 пъти е по-малка, отколкото на повърхността на земята. Затова, виждайки избухването на ядрения взрив, е необходимо незабавно да се легне на дъното на траншеята (окопа).

## ENGLISH TRANSLATION



The walls of the open defensive walls almost completely absorb the penetrating radiation, and in most cases in the trenches, the radiation dose penetrates just the scattered broadcast. Radiation dose with increasing depth of the trench drops sharply. So at half the depth of the trench the dose is approximately 2.5 times smaller, and at the bottom — by 10 times smaller than on the surface of the ground. Therefore, seeing the explosion of the nuclear explosion, it is necessary to immediately lie down at the bottom of the trench.

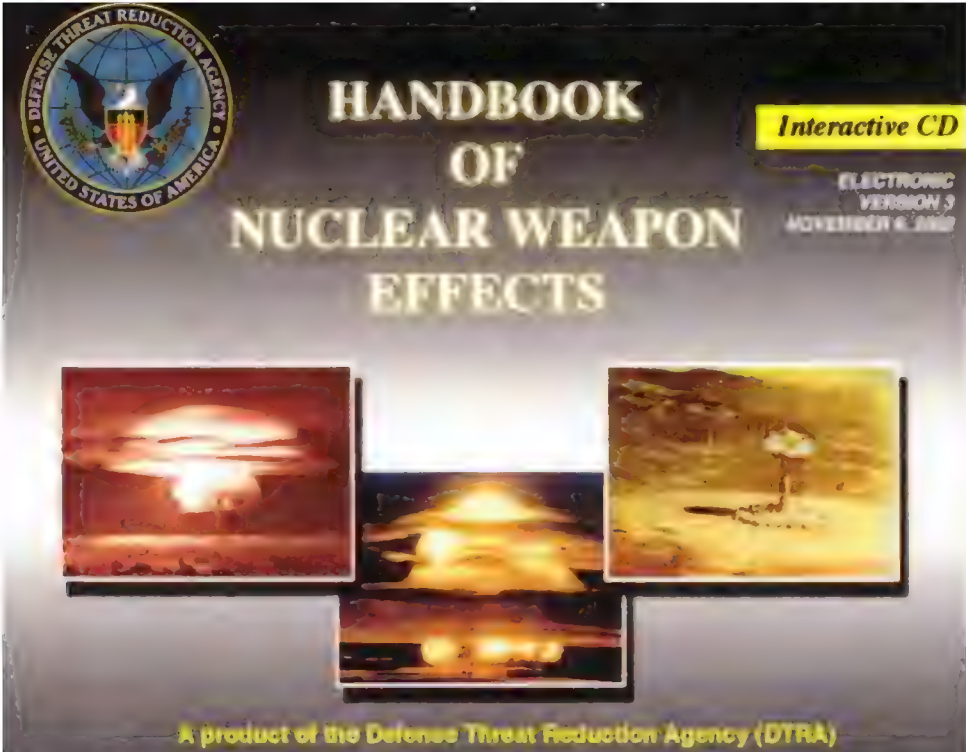
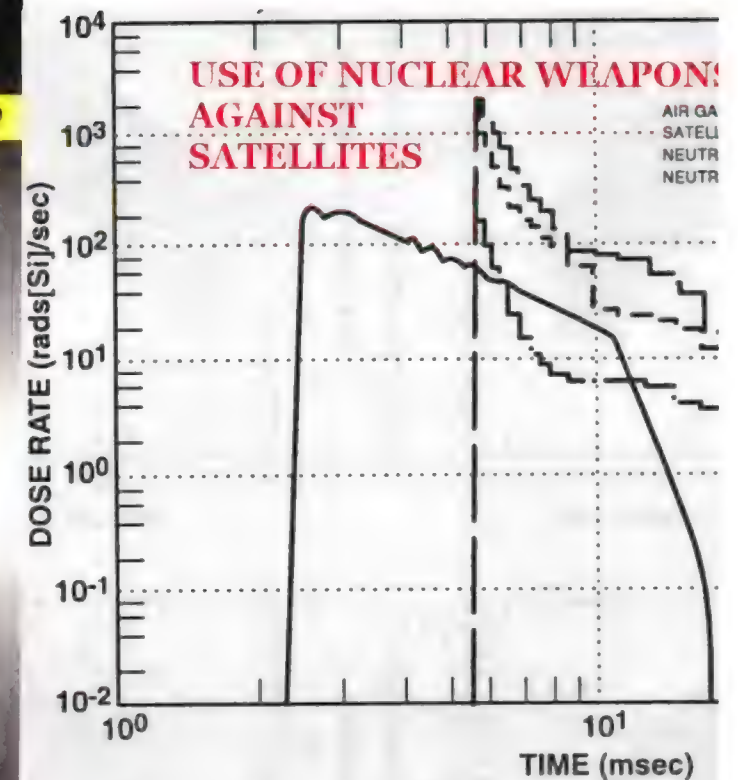
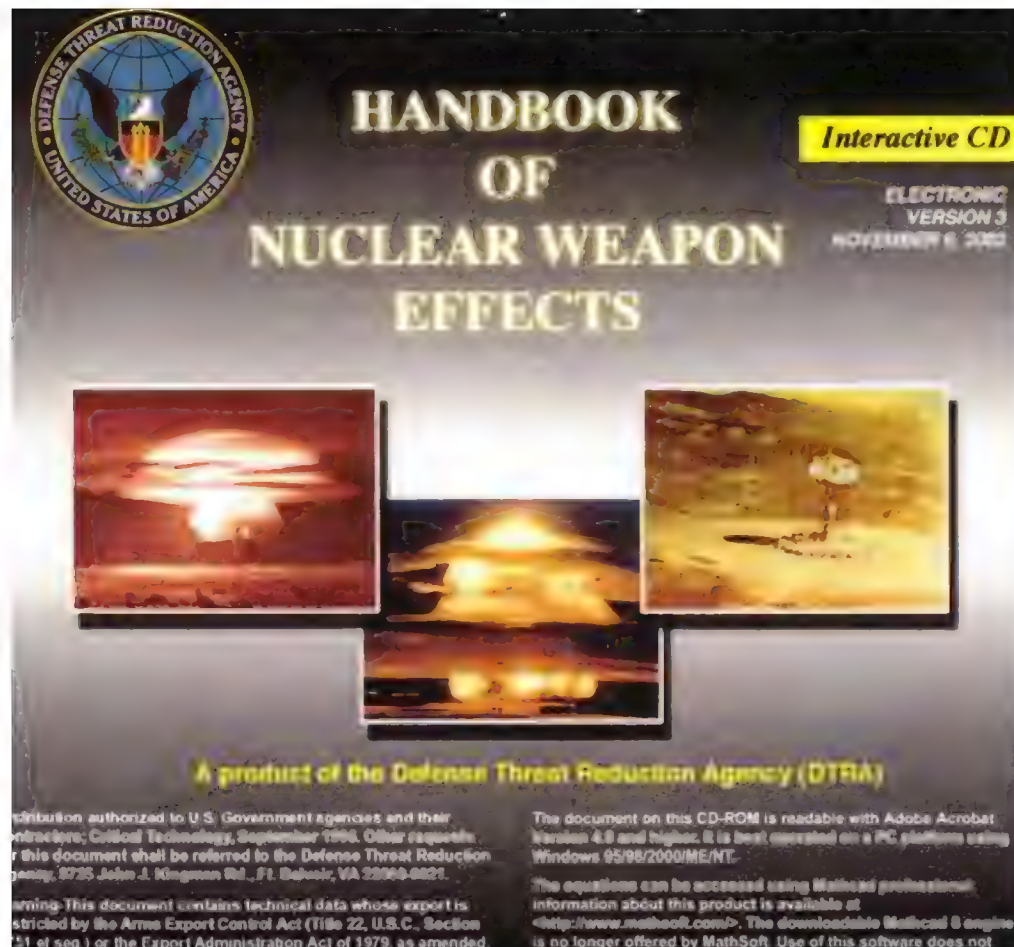


Table 8.10. Height of Burst and Y Generic Device Types.

TYPES OF NUCLEAR WEAPON DESIGNS

Device Type	Data HOB (meters)	HOB (me
Enhanced Radiation (ER) (13)		
Low Yield	75	50
High Yield	200	100
Thermonuclear (8)	200	150
Boosted Fission (5)	160	60
Fission (3)	150	60





**Figure 22.3.** Neutron-Induced Dose Rate Versus Time Following Detonation at 100 km HOB on a Satellite Located at 300 km Burst Range.



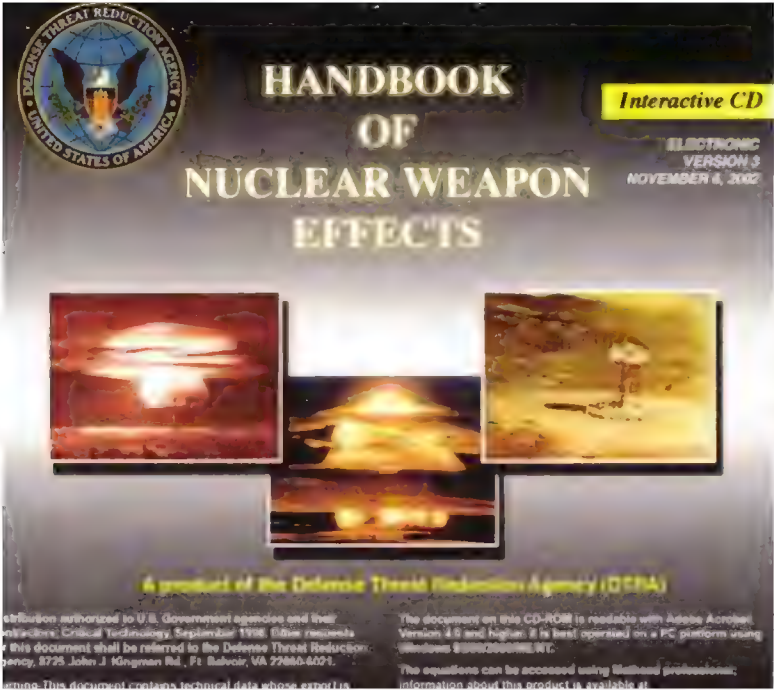


Table 14.1. Combat Ineffectiveness for Pers Two-Man Foxhole (2 x 6 x 4.5 feet) Side-On

COMBAT INEFFECTIVENESS (%)	WEAPON Y		
	0.01	0.1	1
	PEAK INCIDENT OVE		
99	52	38	38
50	37	29	29
1	25	21	21

ABOVE: the report on the radiation shielding by simple, quick, and cheap US Civil War, WWI and WWII-style trench shelters exposed at the UK Hurricane nuclear test in 1952 was classified Secret, although it states in paragraph 13.1.1: "The experiments described in this section show that slit trenches provide a considerable measure of protection from the gamma flash. From the point of view of Service and Civil Defence authorities this is one of the most important results of the trial." This cover-up even after the data is declassified ensures that in a nuclear attack, many people kill be needlessly killed. Thugs believe this will help disarmament propaganda or other propaganda rubbish that totally failed when tried out prior to WWII. Despite this hard-won data being recognised for its importance for civil defence, this data was never published in any UK civil defence manual, handbook or advertisement, and is still covered up, like the rest of the taxpayer funded nuclear test research. When you combine such simple shelters for essential key workers in target areas with crisis evacuation (or "relocation" if "evacuation" is too invocative of September 1939) for the remainder of a city, you achieve a credible war survival strategy that undermines strategic nuclear deterrence. (An enemy can still bomb an evacuated, sheltered city to cause building damage and contamination, but historically this just backfires, increasing the morale and determination of the opponent to fight back.) America for long used secret data from the 1945 combat attacks on Hiroshima and Nagasaki as its primary data source, classifying the detailed 6-volume Strategic Bombing Survey reports from nuclear use in Japan Secret, and never publishing them or releasing them on the internet (it did not want Russia to have the information), and it did not need to expose a house to a nuclear blast wave until 1951 at Operation Greenhouse. This backfired due to the direct information Russia obtained from its own nuclear tests. (Similarly, Britain obtained independent data debunking American anti-civil defence propaganda lies on survival in flattened houses, which it used to the horror of Russian biased arms control and disarmament folk; the CND style liars simply claimed falsely that faked style American "data" somehow was more

UK NATIONAL ARCHIVES: ES 5/2  
ANDERSON SHELTER TESTS AGAINST 25 KT NUCLEAR  
NEAR SURFACE BURST (2.7 METRES DEPTH IN SHIP)  
AWRE-T1/54, 27 Aug. 1954

SECRET—GUARD  
ATOMIC WEAPONS RESEARCH ESTABLISHMENT  
(formerly of Ministry of Supply)

SCIENTIFIC DATA OBTAINED AT OPERATION HURRICANE  
(Monte Bello Islands, Australia—October, 1952)

$$p = \frac{130 \times 10^9}{R^3} + \frac{7.7 \times 10^6}{R^2} + \frac{13.5 \times 10^3}{R} \text{ p.s.i.}$$

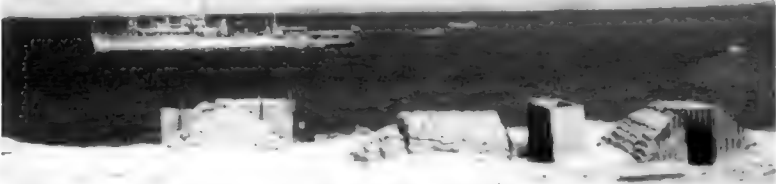


Fig. 12.1, Andersons at 1380 ft range from bomb ship shown in the photo, moored 400 yards off shore.



Left: Fig. 12.3, Andersons at 1800 ft after burst. Right: Fig. 12.4, Andersons protected by blast walls at 2760 ft.

12.1. Blast Damage to Anderson Shelters

At 1,380 feet, Fig. 12.1, parts of the main structure of the shelters facing towards and sideways to the explosion were blown in but the main structure of the one facing away from the explosion was intact, and would have given full protection. At 1,530 feet, Fig. 12.2, the front sheets of the shelter facing the explosion were blown into the shelter but otherwise the main structures were more or less undamaged, as were those at 1,800 feet, Fig. 12.3.

At 2,760 feet, Fig. 12.4, some of the sandbags covering the shelters were displaced and the blast walls were distorted whilst at 3,390 feet, Fig. 12.5, the effect was quite small. At these distances, the shelters were not in direct view of the explosion owing to intervening sandhills.

SECRET—GUARD

13. THE PENETRATION OF THE GAMMA FLASH

13.1. Experiments on the Protection from the Gamma Flash afforded Trenches

13.1.1. The experiments described in this section show that slit provide a considerable measure of protection from the gamma flash. From the point of view of Service and Civil Defence authorities this is one of the most important results of the trial.

13.1.2. Rectangular slit trenches 6 ft. by 2 ft. in plan and 6 ft. deep were placed at 733, 943 and 1,300 yards from the bomb and circular fox hole radius and 6 ft. deep were placed at 943 and 1,300 yards.

The doses received from the flash were measured with film badges and fibre dosimeters in order to determine the variation of protection with distance, with depth and with orientation of the trench and the relative protection by open and covered trenches.

In general, the slit trenches were placed broadside-on to the target but at 1,300 yards one trench was placed end-on. Two trenches, one at 733 and one at 943 yards were covered with the equivalent of 11 inches of sand.

TABLE 13.1  
Variation of Gamma Flash Dose on Vertical Axis of Trench

Type of trench	Rectangular broadside-on open			Rectangular end-on open	Circular open		Rectangular broadside-on covered
Distance (yards) ...	1,300	943	733	1,300	1,300	943	943
Surface dose (Roentgens)	300	3,000	14,000	300	300	3,000	3,000
Depth below ground level (inches)							
6 ...	150	1,000	—	230	214	1,200	(75)
12 ...	75	430	—	150	120	545	47.6
24 ...	33.3	150	584	60	54.5	188	25
36 ...	23	70	216	31.6	30	86	13
48 ...	(20)	43	100	20	17.7	48.5	7.7
60 ...	—	(37.5)	61	13.6	10.7	(33.3)	5
72 ...	—	—	(46.7)	(8.6)	7	—	(3.5)

Entries in brackets are extrapolations or estimates.

reliable than proof tested British data, whose origin was classified secret due to the Marxist infiltrated British bureaucracy which behaved basically as more subtle, even more effective Russian military propaganda front than the better known Cambridge Spy Ring; this thuggery on nuclear weapons capabilities in the UK media continues to this day via Corbyn et al., who are "respected"



on nuclear lies by all UK leading "civil defence historians", "cold war historians" and related propagandarists who know nothing about the nuclear effects secrecy problem.) Recent official publications by the designers themselves of the latest Russian thermonuclear warhead designs, shows equally high quality research, contrary to popular misconceptions.



ADA485845

Defense Threat Reduction Agency  
8725 John J. Kingman Road, MS 6201  
Fort Belvoir, VA 22060-6201



DTRA -TR- 07-38

REPORT

Animal Effects from Soviet  
Atmospheric Nuclear Tests

<https://apps.dtic.mil/sti/pdfs/ADA485845.pdf>

March 2008

DTRA 01-03-D-0022

V.A. Logachev and L.A. Mikhlikhina

Prepared by:  
ITT Corporation  
Advanced Engineering & Sciences  
2560 Huntington Avenue  
Alexandria, VA 22303-1410

TABLE 2: 400 kt Joe 4  
30 metres altitude, 12  
Russia.

OUTDOORS: UNSH

Distance, m	High Yield		
	Number of		
	Total	Killed	Injury
730-1000	6	6	0
1050-1800	13	13	0
1900-4000	27	3	1
4100-8000	6	0	0
Total	52	22	1

100% killed up to 1.8k  
11% killed between 1.9







ABOVE: Secret nuclear weapons stockpile history showing that in May 1949 (the month the Berlin Blockade ended), that the USAF knew using Hiroshima and Nagasaki capabilities of nuclear weapons data that 133 nuclear weapons USED STRATEGICALLY would not win a war against a nuclear unarmed opponent! Hence the increase in American interest in TACTICAL nuclear weapons. **Teller wanted the H-bomb because he knew toss all about the effects of nuclear weapons, and didn't want to know the facts, as proved by Dr Frank H. Shelton in *Reflections of a nuclear weaponeer* which first exposed the crater size lies in Glasstone's book.** Teller lies about the firestorm in Hiroshima in his 1962 *Legacy of Hiroshima* book, which says the exact opposite to the secret 3 volume US Strategic Bombing Survey report (volume 2 of which is specifically about the firestorm, which was set off not by thermal radiation but by blast overturning thousands of charcoal braziers being used to cook breakfast, and the breakfast-timing was also the reason why no air raid alarm was sent out, according to Yoshi Oka, the Hiroshima air raid sirens operator who survived near ground zero).



LA-11401

~~SECRET~~  
UNCLASSIFIED

January 2, 1991

## A SHORT HISTORY OF THE U.S. NUCLEAR STOCKPILE: 1945–1985 (U)

Raymond Pollock

May 1949, a study headed by Air Force Lt. General H. R. Harmon reported that even if all 133 weapons detonated on target the Soviet leadership would not be critically weakened, Soviet military ability to take selected areas of Western Europe and of the Middle East and Far East would not be seriously impaired, and Soviet industrial capacity would not be sufficiently reduced to prevent recovery. The resulting reassessment of targeting requirements led to a substantial increase in nuclear production.

The move away from simple urban targeting to a more elaborate military targeting doctrine designed to meet specific military objectives was to a large extent made possible by the increasing availability of nuclear weapons, and this move in turn, stimulated the need for new weapons.

For the European retardation mission, which needed to deal with what transitory targets, the relatively weight B5 tactical bomb entered stockpile in 1952. This was followed in short order by a series of new tactical weapons.

LA-11401 says that STRATEGIC DETERRENCE using all 133 American nuclear weapons in stockpile in May 1949 (in Harmon's USAF study anyway, the actual number is a fantasy! Los Alamos had bits and pieces of nuclear weapons, many missing "pits" or H.E. lenses)





**July 1977 Commentary, pp 21-34:** Commentary

**Why the Soviet Union Thinks It Could Fight and Win a Nuclear War**

*Richard Pipes*

3. The threat of a second strike, which underpins the mutual-deterrence doctrine, may prove ineffectual. The side that has suffered the destruction of the bulk of its nuclear forces in a surprise first strike may find that it has so little of a deterrent left and the enemy so much, that the cost of striking back in retaliation would be exposing its own cities to total destruction by the enemy's third strike. The result could be a paralysis of will, and capitulation instead of a second strike.

Since the mid-1960's, the proposition that thermonuclear war would be suicidal for both parties has been used by the Russians largely as a commodity for export. Its chief proponents include staff members of the Moscow Institute of the USA and Canada, and Soviet participants at Pugwash, Dartmouth, and similar international conferences, who are assigned the task of strengthening the hand of anti-military intellectual circles in the West. Inside

Malenkov's unorthodox views certainly contributed to his downfall and dismissal in February 1955 as premier, accompanied by a barrage of press attacks. The notion that war had become inevitable are strong indications that Malenkov. Khrushchev, capitalized on the military to form with it an alliance. The help he eventually rode to power. A military counterattack seems to be the World War II hero, Marshal Zhukov, whom Khrushchev made his M

Such figures are beyond the imagination of most Americans. But clearly a generation since 1914 has lost, as a result of two world wars, famine, and various "purges" 60 million citizens, must defend themselves differently from the United States, which has known no famines or plagues. Deaths from all the wars waged since 1914 are estimated at 650,000—fewer casualties than suffered in the 900-day siege of Leningrad in World War II alone. Such a comparison is

the Soviet Union, such talk is generally denounced as "bourgeois pacifism."<sup>24</sup> assess the rewards or detens realistic terms.

Disarmament Agency appeasement/peace deal lies about nuclear war annihilation in his July 1977 Commentary paper, without getting into classified data on nuclear warhead designs or Russian nuclear tests on house and shelter survivability: **"When he was age 16, Pipes laid eyes upon Adolf Hitler at Marszałkowska Street in Warsaw when Hitler made a victory tour after the Invasion of Poland. The Pipes family fled occupied Poland in October 1939 and arrived in the United States in July 1940, after seven months passing through Italy. Pipes became a naturalized citizen of the United States in 1943 while serving in the United States Army Air Corps. He was educated at Muskingum College, Cornell University, and Harvard University."**





# Experts refute CIA — Soviet civil defense

NEW YORK NEWS WORKD, 19 February 1978

By Vicki Tatz  
NEWS WORLD WASHINGTON BUREAU

WASHINGTON—Two experts on Soviet civil defense capabilities disagreed sharply yesterday with statements released Friday indicating that the CIA does not place great significance on the massive Soviet preparations.

Dr. Eugene Wigner, Nobel prize-winning physicist, and retired Gen. George Keegan, former chief of Air Force intelligence, both disagreed with Adm. Stansfield Turner, the director of the Central Intelligence Agency. In

"I don't know what the Soviets plan to initiate," Wigner said, "but the impression one gets is that they constantly claim that to destroy capitalist countries is all right, but to destroy socialism is a terrible crime."

Wigner referred to estimates made by himself and others that only between 2 percent and 5 percent of the Soviet Union's population would be vulnerable to a U.S. nuclear attack, while 45 percent of the U.S. population could be hit.

In another telephone interview Gen. Keegan said there was not the

## PENTAGON WARNS ON SOVIET CIVIL DEFENSE

By Henry S. Bradsher  
Washington Star Staff Writer

The former head of the Pentagon's Defense Intelligence Agency says the Soviet Union might "alter the strategic military relationship" with the United States by military efforts that include a large civil defense program.

Lt. Gen. Samuel V. Wilson, who has since retired, told a congressional committee that the change could put the United States at a disadvantage by the mid-1980s.

CIA Director Stansfield Turner told the committee the Soviets do not presently "possess a civil defense capability that would enable them to feel that they could with reasonable expectation absorb a retaliatory strike at levels of damage that would be acceptable to them."

But, Turner added, "the Soviet Union is making more progress and effort in civil defense today than is the United States." While Wilson's concern was with the future, Turner

dealt reassuringly only with the current situation.

NEITHER OFFICIAL'S testimony to the Joint Economic Committee, given secretly last June and made public in edited form today, dealt with Soviet efforts to develop an antiballistic missile (ABM) defense system as part of the overall program that includes civil defense. Wilson noted, however, that civil defense was related to "various offensive and defensive measures."

A secret new Pentagon study has

stirred increasing interest in developing for a workable ABM system were detection of a Soviet-Arm could protect the some warheads in retaliatory attack.

With ABM coverage system, by itself a meaningful protection against unimpeded missile

exists between the two superpowers.

PRESIDENT CARTER announced last March that Moscow had agreed to discuss the possibility of an agreement to curtail civil defense work as part of disarmament efforts. But the Soviets have not seemed eager to get the talks going, and the administration has not yet decided on its own negotiating position.

The National Security Council is nearing completion of work on a presidential review memorandum on civil defense, using material from the intelligence community and other parts of the administration. The United States now has virtually no civil defense program to protect the American people from nuclear attack. The study is considering whether this country needs a modern program.

Officials have described Carter as hoping to talk the Soviets out of their program so as to avoid the

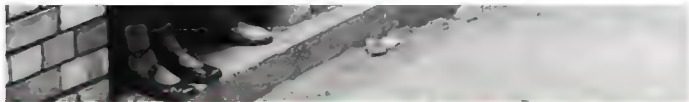
So  
le  
to  
it:  
pi  
ca



Tunnel shelter underground in London



WASHINGTON STAR, front page, 1978 on Pentagon warning that Russian civil defense risks WWII. Russia ignored Carter's request to ban shelters!



London's above ground air raid shelter

Государственная корпорация по атомной энергии «Росатом»

Атомный проект СССР

Документы и материалы

Под общей редакцией Л.Д. Рябева

Том III  
Водородная бомба  
1945–1956  
Книга 2

Составители:

Г.А. Гончаров (отв. составитель), П.П. Максименко



Наука • Физматлит



Москва — Саров  
2009

№ 56

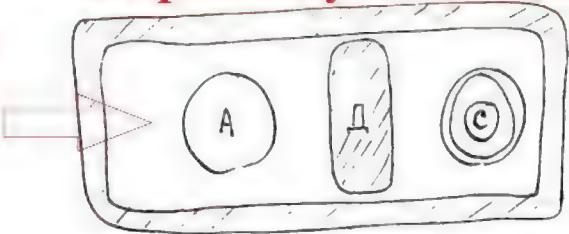
Записка Я.Б. Зельдовича и А.Д. Сахарова Ю.Б. Харитону  
«Об использовании изделия для целей обжатия сверхизделия РДС-6С»

**Zeldovich & Sakharov** 14 января 1954 г.<sup>1</sup>  
**14 Jan 1954, Secret** Сов. секретно  
(Особой важности)

Товарищу Харитону Ю.Б.

В настоящей записке сообщаются предварительная схема устройства для АО<sup>2</sup> сверхизделия и оценочные расчеты ее действия. Применение АО было предложено В.А. Давиденко.

Схема **Proposed by V.A. Davidenko**



Предлагаемая система состоит из металлического корпуса (...), разделенного диафрагмой Д на два приблизительно равных объема. Общий вес конструкции около 26–30 тонн.

(...)  
В одном объеме находится изделие А<sup>3</sup>, в другом — изделие С<sup>4</sup>. Изделия А и С окружены борной заливкой. **(Boron filling)**

(...)  
Первый период — распространение энергии по изделию А — не рассматриваем; в этом периоде вначале энергия более чем наполовину представляет собой энергию излучения и распространяется по механизму лучистой теплопроводности, однако к концу периода уже вырабатывается ударная волна, скорость которой становится больше скорости диффузии излучения.

(...)  
Исполнено от руки в 1 экз. на 16 листах.  
Исп. Зельдович Я.Б. и Сахаров А.Д.  
Дело № 4. 14/1. А. Сахаров

Маш. 9/10 оп  
14/1 54 г.

Архив ВНИИЭФ. Ф. 1, оп. 3с, ед. хр. 35, л. 7–22. Рукопись Я.Б. Зельдовича и А.Д. Сахарова. Подлинник.

**Boron converts x-rays from fission stage A into shock wave, compressing thermonuclear stage C**

Отчет А.Д. Сахарова и Д.А.

**A.D. Sakharov and Frank-Kamenet Compression**, 1954

I. I

Система атомного<sup>2</sup> обжатия новых элементов конструкции

net



**fission stage**

(...)  
Применяя атомное обжатие и даже сотни кг легкого вещества ки раз превосходящей его начал вещество термоядерный взрыв с

**Density compression possible**

III. Ожидает

По предварительным оценкам АО со следующими ориентирами: около 15 тонн.

**Mass of**

(...)  
При сгорании легкого вещества ТЭ

**Yield of pro**

(...)  
Создание технически советского меньшем 15 тонн, вероятно, 1 задачей.

Созданию технически советского предшествовать опыт с более п физическими принципами АО и н теоретической работы.



№ 183

Препроводительная записка Е.П. Славского в Президиум ЦК КПСС  
с представлением сообщения по результатам испытания  
изделия РДС-37

**Secret 24 Nov. 1955 report by E. P. Slavsky to the Presidium of the USSR on results of 1.6Mt RDS-37 test** 24 ноября 1955 г.  
Сов. секретно (Особой важности)

В Президиум ЦК КПСС

Представляю подробное сообщение т. Завенягина и других по результатам  
испытания изделия РДС-37, полученное 23 ноября 1955 года.

Приложение: рукописный материал мб. ст-1191оп на 4 листах.

п/п Е. Славский

24 ноября 1955 г.  
исх. ст-1398/1

Верно:!

**[Приложение]**

В Президиум ЦК КПСС

22 ноября 1955 г. в 9 часов 47 минут по местному времени на полигоне № 2 Министер-  
ства обороны СССР произведено испытание экспериментальной водородной бомбы новой  
конструкции — РДС-37.

Испытание производилось путем сбрасывания бомбы с самолета Ту-16 с высоты 12 тыс.  
метров.

Бомба сбрасывалась с парашютом, что дало возможность увеличить время ее падения  
с 55 до 71 секунды и уйти самолету на безопасное расстояние.

В день испытаний была облачная погода; высота нижней кромки облаков была более  
двух километров.

Взрыв произошел на высоте 1 550 метров, и благодаря этому огненный шар хорошо  
наблюдался, пока не поднялся за облака

Самолеты полностью разрушены на расстоянии до 5000 метров, танки сильно по-  
вреждены на расстоянии до 2000 метров, артиллерия получила полные разрушения на рас-  
стоянии до 3000 метров.

**On 22 Nov. 1955 at 9.47am an RDS-37 was  
dropped by a Tu-16 flying at 12km altitude.**

**Parachute delivery gave time for the plane to  
escape to a safe distance before detonation.**

**Detonation occurred at 1.55km altitude. Severe  
damage occurred out to 5 km for planes, 2 km  
for tanks and 3 km for field artillery.**

*ABOVE:* in 2009, the Russians declassified and published a book containing some original reports on the design and testing of two-stage nuclear weapons from 1954-1956, including 1956 designs for 150 and 1000 megaton bombs using either natural lithium deuteride (7.42% lithium-6 abundance) or enriched lithium-6 deuteride (the enriched 150 megaton bomb has 100 tons i.e. 1.5 Mt/ton yield to mass ratio, but the unenriched one has 500 tons mass, i.e. 0.3 Mt/ton ratio). However, for that year they ordered production of just ten 1.8 megaton yield bombs and another ten 0.5 megaton bombs. They also ordered a 20-30 megaton bomb with a yield of 20-26 tons (i.e. a yield-to-mass ratio

№ 190

Постановление СМ СССР № 46-31сс  
о результатах испытания изделий РДС-27 и РДС-37,  
серийном производстве изделия РДС-27, разработке  
и изготовлении изделий на принципе атомного обжигания<sup>1</sup>

г. Москва, Кремль

**5 Jan. 1956**  
5 января 1956 г.

Особой важности

**USSR Council of Ministers on RDS27 & RDS37**

Совет Министров СССР отмечает, что проведенное испытание изделия РДС-27  
и основанного на принципах АО изделия РДС-37 дало положительные резуль-  
таты и открывает возможности значительного увеличения мощности изделий  
при одновременном сокращении расхода атомных взрывчатых веществ.

Совет Министров СССР ПОСТАНОВЛЯЕТ:

1. Обязать Министерство среднего машиностроения:

а) приступить к изготовлению изделий, основанных на принципе АО, и изго-  
товить в 1956 г. 10 изделий мощностью 1,7–1,9 млн т и 10 изделий мощностью  
0,5 млн т. В 1956 г. подготовить производство на выпуск в течение 1956–1960 гг.  
в несколько раз больше мощных изделий, чем намечалось ранее;

**Orders: 10 bombs of 1.7-1.9Mt yield and 10  
bombs of 0.5 Mt yield stockpiled for 1956.**

б) организовать в 1956 г. серийное изготовление изделий РДС-27,

**Order: manufacture (serial production) RDS27**

в) разработать и изготовить изделие на принципе АО мощностью 20–30 млн т  
весом 20–26 т и подготовить испытание его в III кв. 1956 г. на Новой Земле  
с самолета М-4 с применением парашюта;

**Order: make a 20-30 Mt bomb with a mass of  
20-26 tons for air drop testing on Novaya  
Zemlya using an M-4 aircraft and a parachute.**

Записка А.Д. Сахарова, Я.  
Н.И. Павлову с оце

мощностью в 150 мегатон

**2 Feb. 1956 report  
Ya. B. Zeldovich &  
Davidenko to N.I.  
Mt and 1,000 Mt**

**Option 1: Товарищу**

Сообщаем оценку параметров из  
**150Mt device using**

Изделие с дейтеридом лития  
быть сделано в следующих габари

- 1) диаметр ~ 4 метра,
- 2) длина — 8–10 метров,
- 3) общий вес — около 100 то

**Option 2 (natural**

Изделие с уменьшенным расхо  
лития может быть сделано в габа

- 1) диаметр — 6-7 метров,
- 2) длина — 18–20 метров,
- 3) общий вес — около 500 то

Изделие мощностью в один  
по любому из этих двух вариантов  
ного урана в 6-7 раз, а весов делая

**Natural LiD fuelled 1  
diameter, 18-20 m lo  
To increase the total  
Mt in either option 1  
Li-6 D or natural LiD  
simply increase the l  
charge by factor of 6  
times**

**Comparison of U<sup>238</sup>(n,2n)U<sup>237</sup>  
production by 14.1 MeV neutrons  
in 1953 Russian and 1954 USA tests**

**Page 326:**

**Таблица относительных выходов**

Изотопы	Дата взрыва			RDS-6 (Russian)
	Castle-Bravo 28.II 54 г.	Castle-Romeo 26.III 54 г.	Castle-Yankee 4.V 54 г.	12.VIII 53 г.
Zr <sup>95</sup>	0,37 ± 0,08	1,0 ± 0,1	1,15 ± 0,2	0,7
U <sup>237</sup>	0,9 ± 0,2	1,65	1,9 ± 0,2	4,6

**NOTE: Zr-95 abundances are indicative of unfractionated fission products, since it is well American work that Zr-95 doesn't fractionate significantly, relative to U-237 in these Russ**

of around 1 Mt/ton) for air burst testing. The 14 January 1954 original design paper by Sakharov and Zeldovich attributes the two-stage idea to Davidenko, but it proposes using a boron filling to convert all of the x-rays from the fission primary into a shock wave to compress the fusion stage. Later, on 9 December 1954, another paper by Sakharov and Frank-Kamenetsky works out the details of a specific design: a 15 ton bomb yielding 7.5 megatons which produces a 10 fold compression of the density of the low density fusion fuel inside a spherical, dense (uranium) pusher-tamper. This was a pathetic 0.5 megaton/ton yield-to-mass ratio. It was only through the efforts of Yuri Trutnev (see quotations from him, later below in this blog posting) that the efficiency of the design was massively improved, *firstly by changing the boron case filling into a spherical layer surrounding the fusion fuel to absorb case-channelled x-rays and convert them into an inward shock wave to compress the fusion fuel only* (not a shock wave from a general case filling that will act in all directions, and blast the bomb apart rapidly).

In their Livermore paper UCRL-74116 (PDF linked [here on the IAEA server](#) and [here on the US Government's OSTI server](#)), Nuckolls, Wood, Thiessen, and Zimmerman explain: "... the optimum pulse shape is determined by considerations of entropy and Fermi-degeneracy, hydrodynamics and Rayleigh-Taylor instability, and thermonuclear ignition and self-heating. The required implosion symmetry is achieved by irradiating ... from all sides ... as well as by electron transport in the atmosphere ablated from the pellet. Taylor instability is suppressed by sufficiently rapid implosion as well as by generating the implosion pressure by subsonic ablation driven by diffusive electron transport. ... These hot electrons transport throughout the atmosphere heating electrons (via electron-electron collisions) to temperatures which increase from one to 10 Kev. The pellet surface is heated and ablated by the hot atmosphere, generating pressures which optimally increase from 10<sup>6</sup> to 10<sup>11</sup> atmospheres." This paper adds that "hundreds of implosion/burn computer calculations" were



used to identify the optimal Lagrangian implosion pressure-time history equation, and then that equation was used to identify the optimum input x-ray energy pulse shape needed to achieve the optimal Lagrangian for the most efficient thermonuclear fusion. The rate of supply of X-rays from the fission primary stage (or laser in clean burns) is then controlled by the design of the latter and by plastic foam baffles which deliver the X-rays to the fusion capsule. (There is a discussion in Livermore's [UCRL-LR-105821-97-1 \(pp. 22 et seq.\) of low density foam shells such as aerogels for fusion capsules.](#)) Another Livermore report, [UCRL-80164](#), on *Exploding Pusher Performance* by Rosen and Nuckolls explains that denser pushers work by exploding, with half the mass of the pusher exploding outwards and the remainder imploding inwards and compressing the capsule: "The imploding half of the shell acts as a piston, driving a shock through the DT that principally heats the ions. ... Whereas the high-compression, isentropic implosion targets are sensitive to electron preheat and to Rayleigh-Taylor instability, exploding pushers, by virtue of their rapid thermal wave early heating and by their non-ablative implosion dynamics, are not sensitive to the aforementioned problems." (This paper cites Nuckolls' Secret-Restricted Data UCRL-50000 71-5, 1971, as reference 1.)

**On the subject of x-rays and plastic foam:** Glasstone and Dolan's 1977 *Effects of Nuclear Weapons*, paragraph 7.79 on pages 307-8 states that for a typical nuclear explosion reaching 10,000,000 K temperature, i.e. very soft 4.3 keV predominant x-ray energy (considerably lower energy than medical x-rays which are often well over 50 keV), the mean free path in sea level air is only 15 cm, so that 90% are absorbed within 1 foot of sea level air. Clearly, therefore, sea level air will stop these x-rays from ablating surfaces of a secondary stage more than a foot or two from the primary stage. Howard Morland, Richard Rhodes and Chuck Hansen don't mention this problem for the 1952 Mike design. Was there a vacuum pump to clear the "radiation channel" of the sea-level air that will stop or seriously attenuate virtually all the x-rays? Or is the presence of air in the radiation channel used to diffuse the x-rays in all directions to a uniform concentration, allowing isotropic (similar from all directions) ablation of the secondary? Howard Morland, Richard Rhodes, and a British AWE Aldermaston paper in *Nature* on the "Science of Nuclear Warheads" (linked and quoted later, below) all refer to polystyrene in nuclear weapons, a plastic with approximately the density of water, i.e. over 700 times denser than air, thus cutting the mean free path of 4.3 keV x-rays to just 0.2mm! So any significant thickness (over 1mm for example) of polystyrene will completely absorb the soft x-rays from a primary stage heating the surface of the polystyrene, although re-radiation can occur from the heated surface, which behaves like a [diffuse or Lambertian reflector](#), i.e. Teller's "radiation mirror" in the title of his and Ulam's famous 1951 report, *On Heterocatalytic Detonations I: Hydrodynamic Lenses and Radiation Mirrors*.

If you fill the entire radiation case with polystyrene, however, you get a partition of energy between the kinetic energy of the colliding carbon and hydrogen ions and electrons (plasma) from the heated polystyrene, and x-ray energy which is being produced and absorbed by that ionized plasma. The percentage distribution of energy partitioned between matter and x-ray radiation is a sensitive function of the temperature; the energy in matter being directly proportional to the temperature, while the energy in x-rays is proportional to the fourth-power of temperature (see for instance: H. L. Brode, *Annual Review of Nuclear Science*, v18, 1968, pages 153-202). For "cold" 1 keV x-rays (2,300,000 K) a large percentage of the energy is in the material plasma, but for "hot" 10 keV x-rays (23,000,000 K), most of the energy is in x-rays even within the plasma. The exact x-ray temperature emerging from the primary stage is a function of the shielding of that stage by hydrocarbon plasma from the chemical implosive system used to compress the primary stage core, and the beryllium neutron reflector. If the primary stage is a 2-point implosion elongated or egg shape, much hotter (higher energy) x-rays will emerge from the smaller-diameter sides which have less shielding than the long axis. For very low energy x-rays from older spherical primary stages,



*lower density foams (Seabreeze and Fogbank have very low densities, closer that of air than polystyrene) are used to keep more of the case filled energy in x-ray energy than in the material plasma (ions and electrons), than is the case for polystyrene.*

*Any such material filling the radiation channel will slow the transit of x-ray energy by diffusing it, which allows more time for neutrons from the primary to arrive and begin to fission (predetonate) any fissile material present in the secondary stage (this is not the case for a clean secondary stage, where those neutrons are actually needed to fission lithium to yield tritium, prior to implosion). Since force is the rate of change of momentum,  $F = dp/dt$ , it is undesirable to fill the radiation channel with anything, if you want to maximise the x-ray ablative recoil force on the secondary stage! But do you really want to maximise that impulsive force? Is maximum impulsive force the best way to achieve the greatest amount of secondary stage compression? It turns out, it simply isn't. This was discovered by Nuckolls in the late 1950s and proved in the very clean Ripple nuclear tests during Dominic in 1962. The maximum impulsive compression is given by using a vacuum radiation channel and using the approximately 10 ns width pulse of x-rays from the primary stage to ablate a dense metal pusher on the surface of the secondary stage. But against this factor, you must consider:*

*(1) the problem of how to diffuse those x-rays uniformly all around the secondary stage (easy with a foam filling, even for a spherical shaped secondary stage), and*

*(2) the problem that maximising the ablative force as an abrupt, impulsive shock wave through a dense pusher increases entropy, heating the pusher, whereas a gentler, more nearly isentropic rate of delivery of energy keeps more of the applied energy in the compression of the secondary stage, rather than in heating the pusher. It actually makes no sense, Nuckolls discovered in 1961, to waste any of the limited amount of energy from the primary stage on heating up the secondary stage's pusher by using inefficient, entropy increasing shock compression.*

*There is confusion possible here over Theodore Taylor's levitated primary stage analogy of swinging a hammer to hit a nail, rather than placing the hammer on the nail and pushing it gently. But this is an illusion caused by the threshold force needed to push a nail into wood: you would not use a hammer blow to push a tin-tack into a cork notice board to hold the corner of a poster to the wall! The hammer is needed for the nail in order to integrate muscle power for a second or so, into kinetic energy of the hammer. You don't have enough power in your arm to drive the nail in by simply pushing the nail into the wood. By analogy, the kilograms of chemical explosive in the primary stage lack the power to directly compress the metal shell to a maximum density, just as your arm can't directly (without the power-integrating mechanism of the swing of the hammer) push a nail into hard wood. In the primary stage, chemical explosives are assisted by having pit levitation, so that the chemical implosion can deliver power into the pusher for a period of time, to give it as much kinetic energy as possible before it hits the hard-to-compress core. Otherwise, the mismatch of acoustic impedance of the low density (carbon and hydrogen ion) explosion debris pushing at the metal pit causes the pit to reflect the energy back, rather than absorb it and be compressed.*

*This is simply conservation of momentum: throw a thousand footballs at a wall with low energy, one after another, the footballs will bounce off, with minimal energy delivery to the wall and thus minimal compression or net motion of the wall. It's almost an elastic collision; the low density footballs bounce off the wall with almost the same kinetic energy as they struck it! But if you deliver the same energy as a single iron cannon ball, collision is less elastic and more energy is coupled into the wall! This is more useful for pushing the wall. This is not secret or highly sophisticated mathematical physics, but simply the kind of common sense we all have from experience in*

*the real world. So with the larger amount of x-ray energy from the primary stage, the situation is not like trying to push a nail into hard wood (as for the smaller energy from 20 kg of TNT to compress a metal shell) or to knock a wall down using footballs, but is more like the tin-tack being pushed into cork. Provided that your x-ray ablator (say beryllium) is of relatively similar density to the lithium deuteride fusion fuel you are trying to compress, there is little acoustic mismatch and energy is then coupled efficiently rather than reflected. So you are in the situation of being able to push a tin-tack into cork, rather than having to swing a hammer blow on a nail. If there is a dense fissile "spark plug" in the centre of the fusion stage, it can be levitated to ensure it is delivered a hammer blow by a dense pusher shell.*



**2 Mt R-7 ICBM  
thermonuclear warhead  
weighing 2.9 tons.**

**Note the liquid fuel delivery  
train wagon (shown below)**



27  
Уммант  
4/1

240

РАССЕКРЕТНО

Сов.секретно

(Особая важность)

1 240-241

3 ак. 11.11.56 от 08.06.56

п. 6

С.С. Хруничев

В ПРЕЗИДИУМ ЦК КПСС

Согласно Постановлению Совета Министров СССР от 20 мая 1954г. Министерство оборонной промышленности (НИИ-88, главный конструктор т.Королев С.П.) разрабатывает баллистическую ракеты Р-7 для транспортировки специального заряда типа РДС-6 на дальность 3000 км.

По расчетным данным указанный заряд типа РДС-6 имеет мощность порядка 1,5 млн. тонн тротилового эквивалента и вес его вместе с аппаратурой автоматики был задан 3400 кг.

В результате проведенных в ноябре 1955г. испытаний водородной бомбы, построенной на новом принципе обжатия выявилась возможность создания для ракеты Р-7 нового водородного заряда мощностью около 2,0 млн. тонн тротилового эквивалента и весом 2900 кг.

В соответствии с решением ЦК КПСС от 5 января 1956г. вопрос о размещении нового водородного заряда в ракете Р-7 проработан НИИ-88 МОП совместно с представителями МСМ, при этом установлена возможность разместить новый заряд в головном отсеке ракеты.

Снижение веса нового заряда против ранее заданного веса заряда типа РДС-6 позволит увеличить дальность полета ракеты Р-7 на 200-300 км.

Применение в ракете Р-7 нового заряда не влечет за собой изменения срока начала зачетных испытаний, ранее установленное Правительством.

Просим рассмотреть и утвердить представляемый проект Постановления Центрального Комитета КПСС и Совета Министров СССР по данному вопросу.

Исполнитель на 12.11.56 01252708

ЦЕНТРАЛЬНЫЙ КОМИТЕТ КПСС и СОВЕТ

ПОСТАНОВЛЕНИЕ №

Москва, Кремль

В целях вооружения баллистической более мощным водородным зарядом Ц Совет Министров СССР, в частичное изменение Постановления Совета Министров СССР от 20 мая 1954 г. № 956

Принять предложение тт.Хруничева, нова, Рябикова, Зернова о применении в Р-7 нового водородного заряда мощи тротилового эквивалента, имеющего вес автоматика, взрывательные устройства, элемент 2900 кг, взамен специального мощностью 1,5 млн. тонн тротилового эквивалента, предназначавшегося ранее к установке на

SECRET 195

Ministers de

equip their

IRBM with t

worked in



ABOVE: Secret 1956 USSR order to equip their 8000 km range R-7 ICBM with the 2 megaton warhead with 2900 kg mass (the warhead mass quoted is the important secret, since it is the payload for the missile, and was previously secret), based on their 1.6 megaton 22 November 1955 test at Semipalatinsk. This report states that their Brezhnev 1000 tested yield 1953 hydrogen bomb design (Teller's externally-pit-boosted or single-stage Alarm Clock RDS-6s) would require 3400 kg to yield 1.5 megatons, so the lighter new two-stage design increased the R-7 missile range by 200-300 km. That was the only megaton range test at Semipalatinsk because further high yield tests there were banned after it destroyed the local meat processing factory. **Yuri A. Trutnev (First Deputy Scientific Director of RENC-IMPET) explains how a 500 kt yield limit was imposed on Semipalatinsk after the 1955 test of 1.6 megatons caused damage: "it was recommended to put into service a certain [double-primary] version of the product. And so, one of the products**

was delivered to the Semipalatinsk test site for testing, a product developed under the guidance of Evgeny Ivanovich Zababakhin. He claimed that the power of the explosion would be on the order of 0.5-0.6 megatons. I note that at that time there was a ban on carrying out explosions with a capacity of more than 0.5, because as a result of an explosion with a capacity of 1.5 megatons, the Semipalatinsk meat processing plant was destroyed. And here we are, no weather, nothing to do, I decided to read the reports. I took Zababakhin's report, I compare the calculations with ours, and I see: yes, there is not 0.5, not 0.9, all 1.5 megatons should work out there! I could be silent, but if 1.5 megatons will again "destroy" the meat processing plant? At one of the meetings, I reported this to the test leader. As Zababakhin fell on me: "This is a disgrace, this is not the case, this is ugly! You specifically say to remove our bomb from the tests. Honest people don't do that!" I suggested: "Let's see together." He did not look at anything, slammed the door and left. And it's good that they didn't try it! Because the next year in the north we blew up our version of the product and received about 0.6-0.8 megatons. On the occasion of our success, they poured me a glass of cognac: "For the victory!" It is noteworthy that it was February 23, 1958, the day of the Red Army. In the same year, 1958, we began to prepare the next session on the basis of the 49th project. There were attempts to delay the tests, and the ministry had no desire to test products of lower power. ... And they tried it, and everything worked out. This development subsequently became the most important basis for improving the thermonuclear arsenal of our country." In addition to moving to double-primary thermonuclear weapon design, they also finally conducted their first ever gaseous tritium and deuterium boosted plutonium pit primary stage test on 28 December 1957, yielding an "amazing" 12 kt (below).

warhead with  
kg, based on  
1955 "new a  
thermonuclear



# First tritium and deuterium gas boosted plutonium primary stage gave "amazing" 12 kt, 28 December 1957!

Секретно  
(Особой важности)

Товарищу ХРУЩЕВУ Н.С.

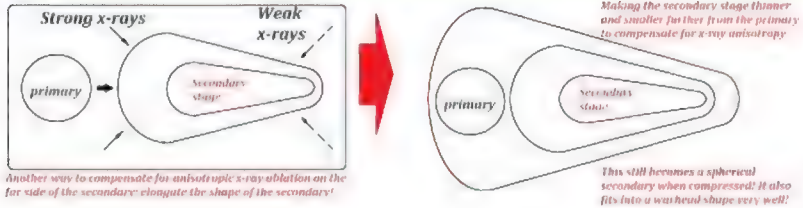
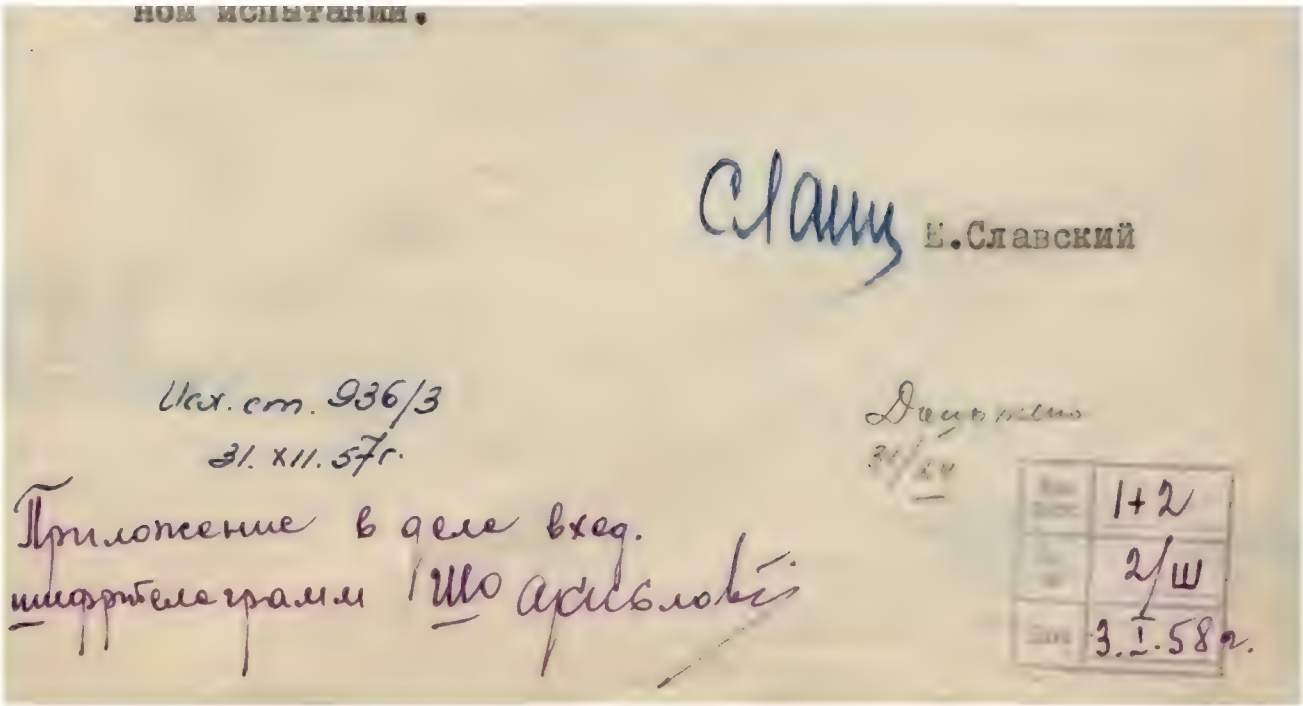
Товарищу БУЛГАНИНУ Н.А.

Рассекречено протокол 4(1)  
Акт 24.45 СК Росарх  
от 14.04.15 № 564.287  
Подпись 24.04.15

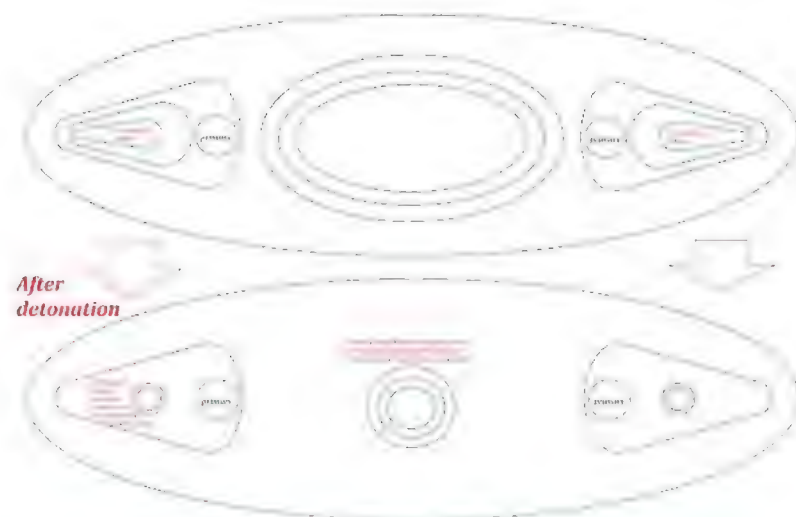
Докладываю, что 28 декабря 1957 года в 10 часов утра по московскому времени на полигоне № 2 Министерства обороны СССР, в соответствии с утвержденным планом, был произведен взрыв атомного устройства с целью изучения нового способа повышения эффективности использования плутония в атомных зарядах за счет добавления небольшого количества газообразной смеси дейтерия и трития.

Результат опыта положительный.

Прилагаю телеграмму тов. Боболева (руководитель испытания) и др., полученную с полигона о проведен-

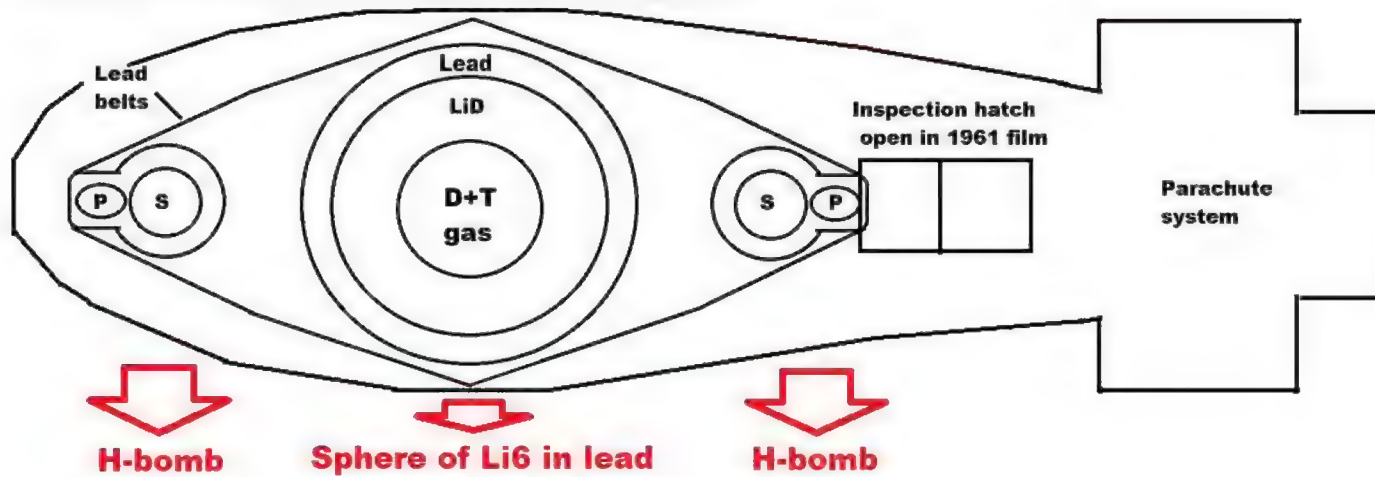


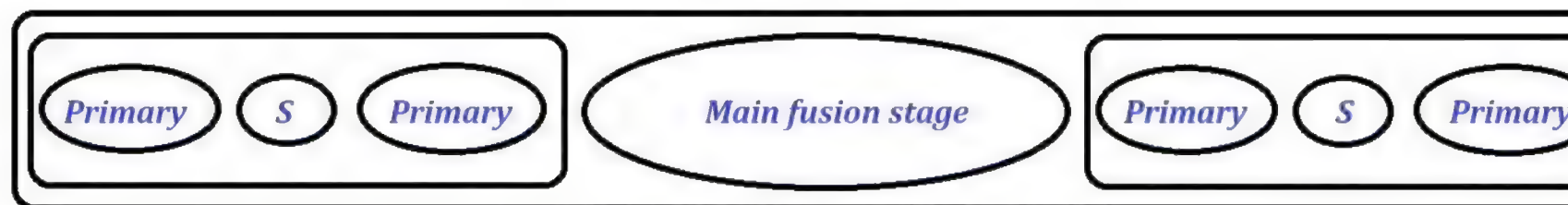




*How elongated fusion stages are compressed into spheres for maximum fusion efficiency by anisotropic x-ray delivery*

#### RUSSIAN'S >99% CLEAN NUCLEAR WEAPON DESIGN





*Very clean long pipe device for peaceful uses*

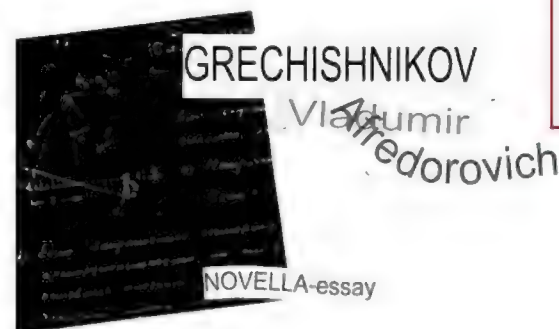
*(for insertion into narrow gas/oil boreho*

Ю. К. ЧЕРНЫШЕВ

Yu . K . CHERNYSHEV

**КОНСТРУКТОР**  
*ядерного оружия*

**designer**  
*nuclear weapons*



Да, творческих, естественных в ло. И сама «производственная» исто чалась, по сути, с серьезного спора- основателями». Во второй полов основное внимание было перенесен пенчатых» термоядерных зарядов. И года были успешно испытаны два разработки НИИ-1011 на физическо год до этого Владимиру Федорович степень кандидата технических нау.

76

**English trnslation:**

Yes, creative, natural disputes in the enough. And the very "production" history o began, in fact, with a serious dispute-comp founding fathers". In the second half of focus was shifted to the development of "tw thermonuclear charges. And already on A two thermonuclear "products" developed t physical principle of RDS-37 were success year before that, Vladimir Fedorovich was of Candidate of Technical Sciences without

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САРОВ 2002

SAROV 2002

ABOVE: how to uniformly compress a secondary fusion stage using x-rays without problems from the reduced x-ray intensity on the side of the secondary which is furthest from the primary stage (due to the "x-ray shadow" created by self-shielding on the secondary's far-side from the fission primary stage, by x-ray shielding due to the presence of the secondary stage itself). This problem has several possible

solutions which are discussed in detail later in this post, including quotations from the actual Russian nuclear weapons designers articles and declassified reports. On April 10 and 16, 1957, Russia tested shaped new, improved two-stage thermonuclear designs, yielding 680 and 320 kt, respectively. The final R-7 warhead design, RDS-46A, was proof-tested on October 6, 1957, yielding 2.9 megatons. (*Since elongated secondary aka thermonuclear stages become spheres when subjected to linear implosion from two primaries, or two two-stage thermonuclear devices as in the 50 megatons Tsar Bomba and lower yield cleaner devices, and since pear or egg shaped secondary stages become spheres when properly compressed by the anisotropic x-ray exposure from a single primary in devices without foam equalizers filling the case, we will generally depict secondaries as being spheres later in this post; even when they are elongated prior to compression.*) It turns out that the first Russian two-stage device tested in late 1955 with 1.6 megatons yield (it was designed to give 1 megaton) had a secondary stage which was a sphere when compressed (*it may however have been egg or pear shaped prior to compression, as shown above*, in order to allow for the anisotropy of x-ray delivery to a spherically-compressed secondary stage when using a single primary, without the use of a foam filling to disperse x-rays to a uniform energy density throughout the case). The **designer testimony (Yuri Trutnev)** states that the secondary stage used in 1955 had a *low-density* ablative material layer (e.g. beryllium metal, or plastic foam) around it (not filling the entire radiation case, unlike Western designs with spherical secondary stages).

**Yuri Trutnev:** *"I knew that when they explode, a lot of energy comes out in the form of x-rays. And I began to think about how to make it so that the thermonuclear charge is overlaid with a light substance - "coating", these can be chemical elements with a low number, having very good thermal conductivity, and with the help of X-ray radiation from the explosion of the primary atomic charge "coating" heat up. At the same time, its substance would evaporate outward, towards the radiation, and as a result, as during the movement of a rocket, a reactive impulse would be created, directed into the secondary charge and creating the pressure necessary for effective compression of the thermonuclear "fuel".*" (The day after seeing that successful 1955 test, Yuri Trutnev told his colleague Yuri Nikolaevich Babaev another idea, the idea for using two primaries, one on each side of the secondary stage, which was assigned product number 49, weaponised by the deputy director of the lab, and air drop tested on February 23, 1958, becoming the basis for today's cheap thermonuclear warheads made by Russia; *all of this will be discussed later in detail in this blog post, since* .) This would have caused a far gentler (slower) compression of the secondary stage than when using a dense U238 or lead ablator, thus increasing what Lawrence Livermore National Laboratory weaponeer Nuckolls calls "approximately **isentropic**" (**unchanged entropy**) **shock compression**, which is more efficient since more of the compression energy remains in compressive mechanical work, rather than being turned into heat energy (you want the secondary stage to be as compressed as much as possible without wasting that energy as heat; heat is generated by fission in the compressed oralloy layer or the spark plug core of the secondary stage, or in clean secondary stages, in fusion of D+T gas in the core, following its extreme, isentropic compression, as used by Russia from 1965 for more efficient thermonuclear weapons).

*ABOVE:* the Russian 1955 thermonuclear weapon with a *low density ablator* is similar to a system described for evaluation purposes in a declassified 2011 Jason report, *Hydrodynamic and Nuclear Experiments* (JSR-11-340, Secret-Restricted Data before deletions such as the deletion shown above) on pages 72-3 compares the shock compression versus the isentropic compression of beryllium coated plutonium pits in nuclear weapons by different shapes of x-ray energy pulse. It notes on page 21: "The National Ignition Facility [NIF] utilizes laser drive to compress samples *using shock or quasi-isentropic compression* [Emphasis added], potentially to in excess of 100 Mbar. Currently, samples have been ramp compressed to 50 Mbar. It can also be used to explore high strain rates (up to  $10^7$  /s). It has not yet been qualified





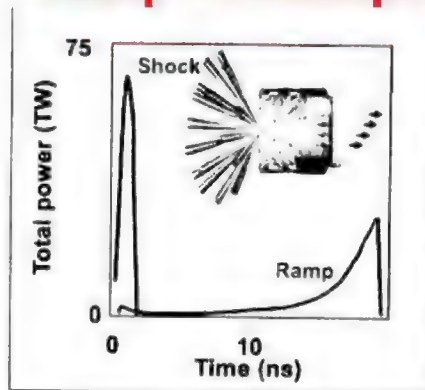
~~SECRET/RESTRICTED DATA~~**Ramp = isentropic**

Figure 24: Left: the use of pulse shaping on NIF to produce either shock compression or ramp compression.

DOE (b)(3)

DOE (b)(3)

initially shock compress Pu and then drive it isentropically in a way similar to the environment experienced by a Pu particle in an imploding primary. The concept is shown graphically in Figure 24. Of course, the actual design of the appropriate pulse shape requires careful measurements but the initial experience with the NIF laser is encouraging. It has been repeatedly demonstrated that one can "program" a pulse of a given shape and the laser produces the desired pulse with impressive repeatability.

Questions have arisen regarding the accuracy of the measurements that will be achieved, and the extent to which ramp compression will be possible. For example it may not be possible to maintain isentropic compression at very high pressures without suffering formation of a shock in the material. This will require further investigation. On the other hand, the recent work on diamond to 50 Mbar and Ta to 6 Mbar is encouraging. In Figure 25 we show results from explorations of the Ta EOS on several platforms. The results shown correspond to isentropic compression As can be seen the new NIF data are in good agreement with previous data from the Omega laser and are also in agreement with data obtained on the Z pulsed power platform at SNL. The results are the highest pressure off-Hugoniot data achieved to date.

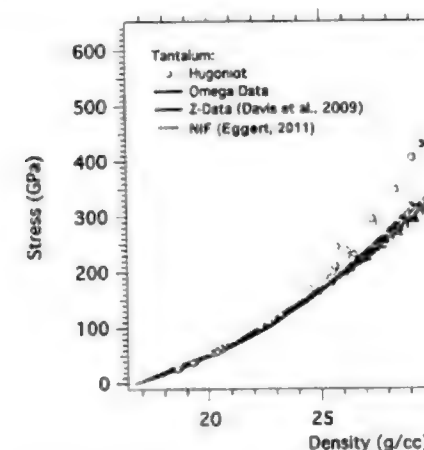
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Figure 25: Measurements of the off-Hugoniot Ta E forms.

No Pu experiments have yet been performed or require work to ensure that the appropriate safety i have been voiced that the type of Pu that could be material which typically is alloyed with Ga, has va differing isotopic compositions. In addition, it is Pu samples on NIF also will not match that of we However, in our view this is not a compelling objecti of fundamental measurements it is important to ge (both with and without Ga) as this high pressure theoretical approaches to characterize the more Ultimately, of course, it will be necessary to inve grade material and these issues will have to be ad

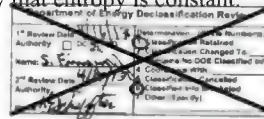
We next discuss the possible use of laser platf at high pressure. Remington et al [54] have de investigate various strength models. The basic id is aimed at a gold hohlraum which then produc impactor which becomes a plasma after absorption

to handle Pu, but has provided important data on surrogates such as Ta." Shock compression is an abrupt hammer-blow produced by a fast-rising, brief pulse of x-ray energy, whereas the less abruptly rising pulse of isentropic compression is a reversible adiabatic pressure wave such as sound waves, which for high energy densities must be produced by a more gradually ramping, longer pulse of increasing energy density; this increases the proportion of the energy in kinetic energy of particles (dynamic pressure) rather than in internal energy (overpressure). ~~SECRET/RESTRICTED DATA~~ violate thermodynamic physics, but quasi-isentropic compression is possible. A simple analogy is hitting a door with a hammer blow, versus gently pushing a door closed. Hitting the door wastes some energy in sound waves, oscillations, and heating, causing a large, abrupt and wasteful loss in the entropy of the system, whereas a gentle push, using the fraction of the energy of the hammer, which has only kinetic energy of motion of the door causing it to pick up momentum efficiently and swing in the desired direction, minimising the energy wasted as sound, oscillations and heating. For a gas, isentropic flow does not imply that temperature is constant, only that entropy is constant.

November 2011

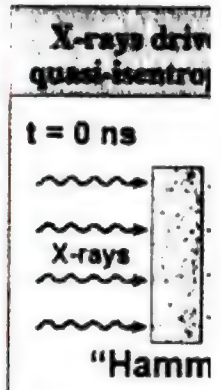
JSR-11-340

JSI-2011-027 Copy C16



**Pages 72-3 and Fig 26 on p73 show how "X-rays drive a plasma 'hammer' that quasi-isentropically compresses the target", the target "anvil" being beryllium-coated rippled-interface plutonium**

Figure 26:



## Change in entropy,

$$\Delta S = nC_v \ln(T/T_o) + nR \ln(V/V_o)$$

**Hence, for isentropic compression (no change in entropy):**

$$\Delta S = 0$$

**Therefore:**

$$C_v \ln(T/T_o) = -R \ln(V/V_o)$$

**ABOVE:** We can get rid of the natural logarithms in this isentropic solution,  $C_p \ln (T/T_0) = -R \ln (V/V_0)$ , by raising both sides to become powers of the base, e, thus:  $T/T_0 = (V/V_0)^{\exp(-R/C_p)} = (V/V_0)^{\exp(1 - \gamma)}$ . Nuckolls et al provide the idealized equation for the x-ray delivery rate of energy required for *isentropic compression of the secondary (fusion) stage in nuclear explosives*, in a paper openly published in *Nature*, v239, p139, 1972 (extract is linked here):  $(1 - t)^{-1.875}$  where the 1.875 is from  $3\{\gamma\}/\{\gamma + 1\} = 15/8$ ,  $\gamma$  being the ratio of the specific heat capacity at constant pressure to that at constant volume, for dense hydrogen with degenerate electrons (where  $\gamma = 5/3$ ), and  $t$  is time measured in units where 1 unit of time is the time taken for the shock wave to reach the centre of the secondary stage. You can't ever achieve this idealized isentropic energy rate, but you can do your best (*any* movement of the curve from an abrupt shock to a gentler rise increases the isentropic compression contribution relative to shock compression, so it is not true that you need a "perfect" fit to the idealized isentropic pulse delivery curve, which approaches infinity in the asymptotic end limit anyway!), and Dr John Nuckolls successfully proof tested this "Ripple" concept with multimegaton 99% clean atmospheric nuclear tests during Operation Dominic in 1962, which will be discussed in detail later. The quasi-isentropic compression in the 1955 Russian thermonuclear test with a low-density x-ray ablator rather than the high-density ablaters used by America, may account for the fact the yield was 60% greater than predicted (presumably the prediction ignored isentropic compression): 1.6 megatons measured, versus 1.0 megaton prediction. Since the Russians did not use tritium plus deuterium gas in the core of their secondary stage in 1955, the contribution of isentropic compression was probably marginal, but the low-density ablator would have come into its own when Russia placed deuterium plus tritium gas into the core of the fusion charge in their 27 October 1966 test, yielding 700 kt. Russian has always prided itself on over-educating its population in advanced physics (poster below).







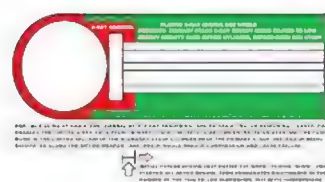


### ***Compared: Schools in the USSR and the USA. Moscow, 1955***

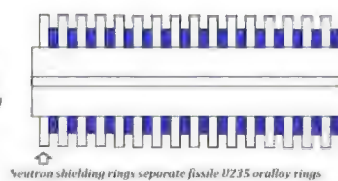
Our point here is just that the Russians seem to have replicated the *TWO* key features of the isentropic Ripple design (a low density ablator to replace a dense ablator, and T+D gas in the core of the fusion charge) and compressed these into smaller devices for MIRV warheads *(an approach rejected by the USA, despite its rhetorical use to attack Russian competence, by AEC Chairman and plutonium discoverer Glenn T. Seaborg in a tape-recorded secret response to President Kennedy's question of what Russian nuclear warhead designers would make of the secrets of the American thermonuclear warheads; this issue will be discussed further, later in this blog post)*. Isentropic compression nuclear warhead design details were **declassified because of its alleged relevance to "clean nuclear fusion power" pipe dreams**. In reality, this is purely clean nuclear weapons research, because to make it efficiently generate electric power you'd need to be setting off huge H-bombs regularly to generate significant heat to justify the expense! The declassified 1955 two-stage Russian thermonuclear case design was called by the Russians "pear-shaped", possibly due to the fact that *a pear-shaped secondary stage, when compressed by the anisotropic x-ray environment produced by a single fission primary stage, becomes an ideal sphere with maximum fusion burn efficiency* (above) for that single primary design (without a foam x-ray diffusive equalizer, which slows down the x-ray ablative secondary stage coupling mechanism, thus increasing the number of neutrons that arrive in the secondary stage prior to full compression, leading to the need for a neutron shielding interstage to prevent pre-detonation of an or alloy loaded secondary). **There is also a relevant 1975 US patent, "Foam encapsulated targets", US4376752, by nuclear weapons designer John H. Nuckolls (who has explained elsewhere, as we will quote below in this post, how such research led to four successful isentropically compressed, very clean megaton tests during 1962, authorised by Kennedy) and two others which states: "... a quantity of thermonuclear fuel is embedded in low density, microcellular foam which serves as an electron conduction channel for symmetrical implosion of the fuel ...")**.



Nuckolls explains the physics of spherical stage thermonuclear burn efficiency beautifully in his 1973 report UCRL-74345: "The rates of burn, energy deposition by charged reaction products, and electron-ion heating are proportional to the density, and the inertial confinement time is proportional to the radius. ... The burn efficiency is proportional to the product of the burn rate and the inertial confinement time ... Much higher pressures are required if the electrons in the high density DT are not Fermi-degenerate, i.e. if the implosion is not essentially isentropic. The pressures applied to implode the pellet must be uniform spatially and temporally to less than one part in twenty in order to preserve effective spherical symmetry. ... The hydrodynamic Rayleigh-Taylor Instability must be controlled. Otherwise the pellet surface cannot be relatively gradually accelerated during the implosion as required by the optimum pulse shape." Nuckolls also states on page 15 that most of the energy supplied to the fusion capsule is lost in the ablation process (the hot blow off material has the velocity of sound for the heated surface temperature) so that only a coupling efficiency (i.e. the fraction of supplied x-ray energy that results in implosive compression of the secondary state) of 2-15% is available to compress the fuel; this coupling efficiency is given by the very simple equation:  $(1/2)v/C$ , where  $v \sim 10\text{-}300\text{ km/s}$ , is the fusion capsule implosion velocity, and  $C \sim 200\text{-}1000\text{ km/s}$ , is the velocity of sound for the blown-off plasma.



There are still issues with the design shown on the left e.g., a fissile spark cylinder (or UZTS aka urulloy pusher) can't be made arbitrarily long without becoming critical.



ABOVE: the American problem with discarding the 1962 isentropic breakthrough and instead using an expensive highly-enriched U235 aka "oralloy" ablator "pusher" (external spark plug around the fusion fuel capsule in the secondary stage of classic cylindrical shaped American two-stage devices), to increase the yield-to-mass ratio for compact nuclear weapons like

the B61 and its alleged smaller derivative the W80, is the *critical mass of the oralloy pusher*. You can't put a whole load of U235 concentrated in the bomb's secondary stage to give a huge yield, or it is critical (and you have a nuclear reactor, not a bomb!). One solution to this critical mass issue in secondary stages, particularly for cylindrical secondary stages, is for relatively small rings of oralloy to be separated by larger diameter neutron absorbing "washers" of, say uranium-238 or possibly lithium deuteride (above right; oralloy is colored blue, U238 washers are white), as suggested by the **declassified nuclear weapons film, *Developing and Producing the B-61*** (see **10 minutes, 7 seconds into the video - screenshot below - where the B61's entire secondary stage assembly is seen undergoing "criticality studies of the nuclear assembly", and compared to 12 minutes 21 seconds where the partial assembly components of both pit and secondary stage are displayed**). This film also shows an axial rod through the centre of the secondary stage and an x-ray baffle separator in the middle of the secondary stage, which we will ignore for the present. Teller's original "sausage" secondary concept was for a series of secondary stages connected like sausages, x-ray irradiated and imploded one at a time, with baffles separating them, because if there was just one very long cylinder, the axial fissile spark in will be initially compressed properly only near the primary, and then will pre-detonate itself along the remainder of the spark plug before the remainder of the secondary has been compressed (the x-rays may go a light velocity in a vacuum, but the compression of the secondary, whether by shock or isentropic, is much slower!). Details of the axial central rod through the B61 secondary stage are shown below, in stills from the same declassified film.

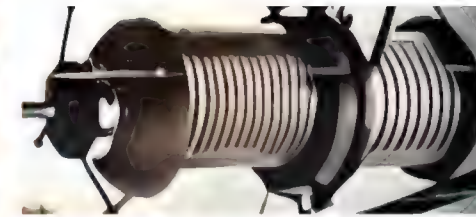
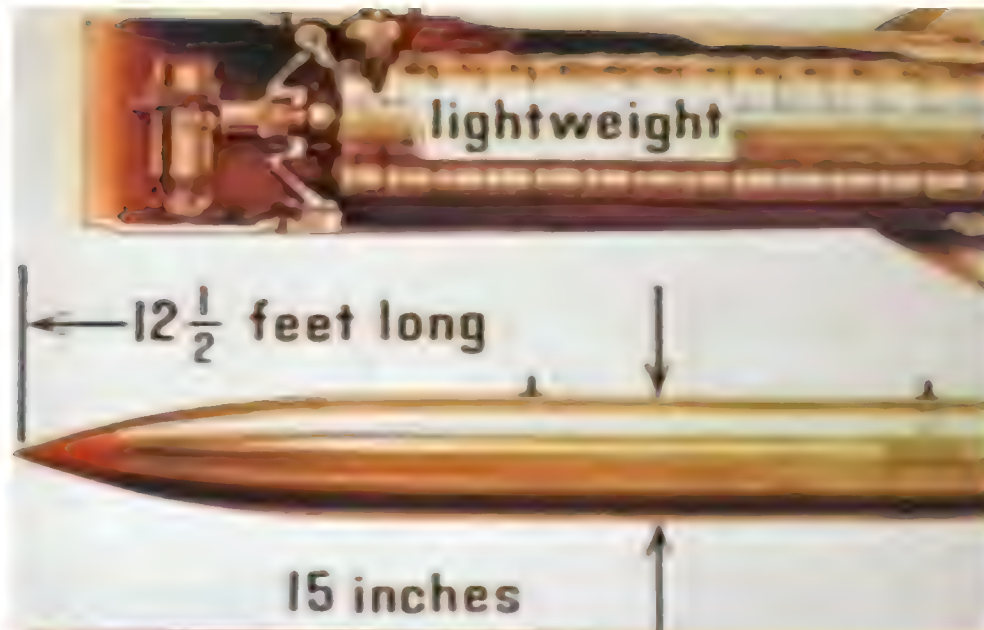


**View of the axial rod running through B61 bomb, as seen in declassified film *Developing a***





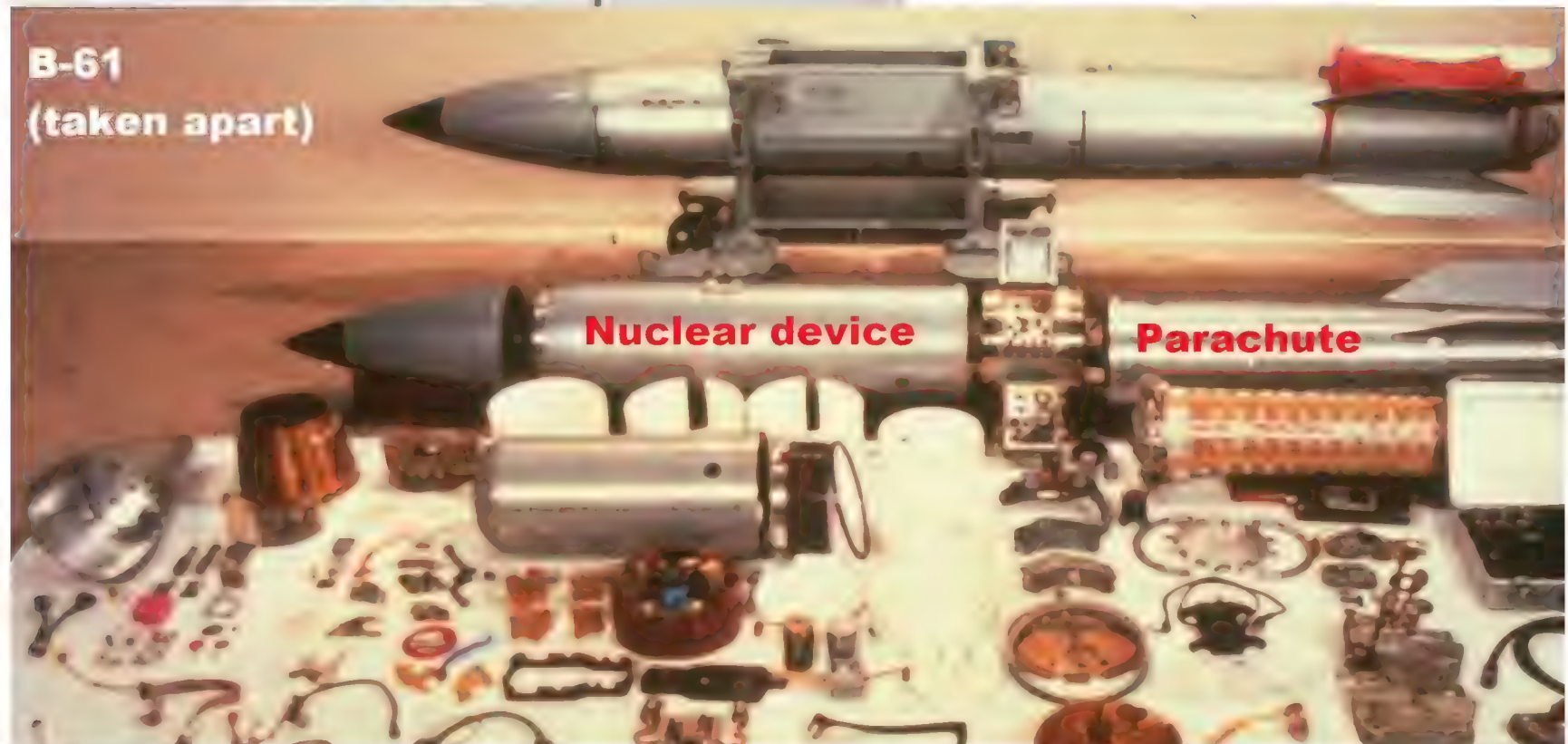


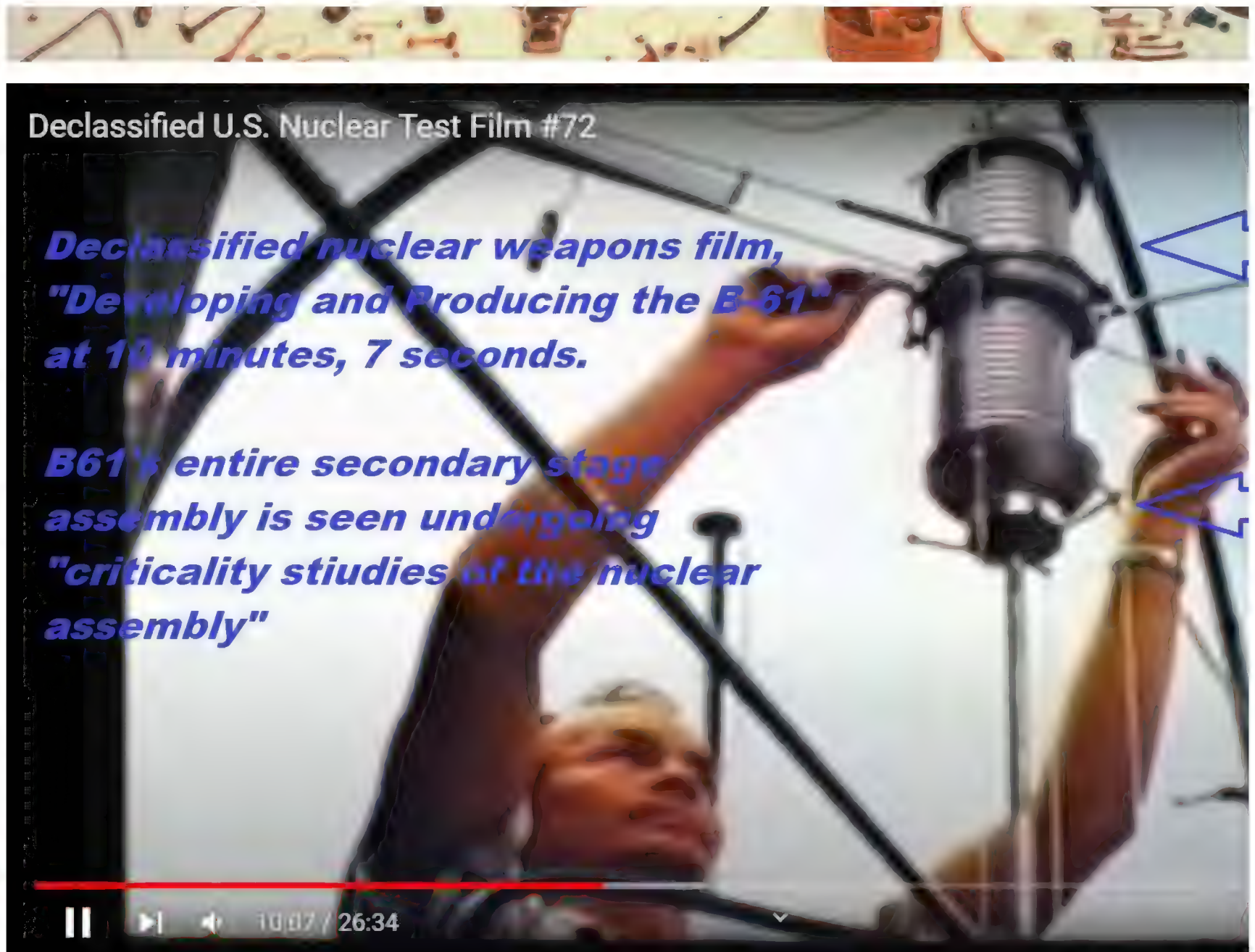


**ABOVE: B61 secondary stage assembly seen undergoing a criticality test in declassified film *Developing and Producing the B-61* (cropped and rotated).**

*The rings in the secondary stage assembly are the right of the central x-ray baffle.*

**RIGHT: central axial rod seen in the B61-4 trainer (similar yields to B61-12)**





The alternating rings along the secondary stage in this design makes the surface area of the secondary stage rippled, a concept that increases its surface area for absorption of x-rays, which was the original motivation for Teller's ambitious but failed 1954 Morgenstein





(spiked secondary stage Operation Castle shot 3) nuclear test at Bikini Atoll. Even excluding the issue with computing and achieving the geometry of isotropic compression of a sphere by radiation from a single primary, Teller at first did not want the spherical secondary stage (used by Russia in 1955) in American nuclear weapons, because the soft 1-10 keV x-rays that couple energy between stages are absorbed in a very *thin surface layer* of the secondary, so the surface area of the secondary stage is crucial, and is minimised (not maximised) for a

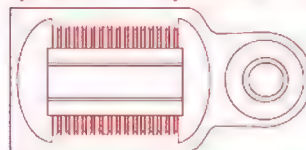


spherical shape. *This means that, because a sphere mathematically has the MINIMUM surface area to volume ratio of any shape, a sphere absorbs the MINIMUM possible fraction of the x-rays from the primary stage. So the sphere is the WORST design possible, if you want to maximise the coupling of x-rays to the secondary stage. This is not speculative or a matter of secret computer designs of classified weaponry: it is very simple mathematically for a kid to prove that far more x-ray energy will be absorbed by the inside of the weapon casing than on the outer surface of a spherical secondary stage.* Teller's Livermore laboratory, however, even in 1954 at the Morgenstein test of Castle, tried to get around this problem of the small surface area absorption of soft x-rays by the surface of a sphere, *by hugely increasing the surface area of the "sphere" by making its surface "spiked" or convoluted so it will absorb a larger fraction of the x-ray energy from the primary stage.* This may also improve the stability of axial compression in a cylindrical secondary stage, where (unlike early designs like Mike in 1952) a very small primary (5 kt unboosted or 10 kt boosted) is used to axially compress just a *very small part of the secondary stage near the primary stage in an x-ray radiation channel confined by a seabreeze x-ray baffle foam.*

In the Mike "sausage" and other earlier Castle nuclear designs, x-ray baffling foam was not used in this way to fill most of the case and create a radiation channel confining the initial fusion burn region, but was just used as Teller's "x-ray mirror" (a layer of plastic hammered on the the lead lining of the steel case with nails, to reflect some x-ray energy back on the secondary stage, and to prevent high-Z lead ablation debris quickly filling the radiation channel and killing the coupling). So it appears the Mike "sausage" design required a larger yield primary stage to compress the entire cylinder, whereas the use of x-ray attenuating foam to limit initial exposure of the secondary stage to a few rings near the primary, reduces the size of the required primary. Once the fusion burn begins in a limited part of the secondary, it releases x-rays which then help to compress and ignite fusion in the remainder (this is the brains of the American secondary design, requiring very sophisticated computer modelling as well as back-up nuclear testing to verify them). A declassified film of the B61 shows the secondary stage of the B61 (and presumably its scaled down version, the W80) being tested, a rippled cylinder with rounded shielding end caps (below). *This appears to be an entirely different concept to Russian nuclear warhead design.*



*W80 is reportedly a scaled down version of the B61, which has a spherical 1st and cylindrical 2nd stage*



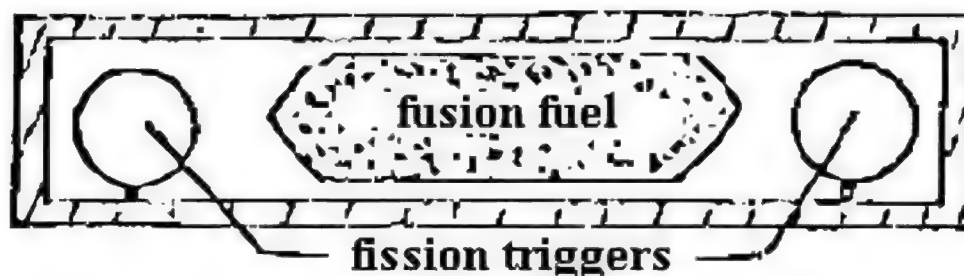
*Secondary stage is grooved or rippled to stabilize its radial compression by x-ray ablation. Seabreeze x-ray diffusing foam fills the casing*

Another option, which the Russians first tested very successfully in 1958, is to simply put two smaller fission primary stages into a radiation case, one on each opposite side of the fusion capsule, as shown below, with the two sets of neutron initiator tubes and detonators, corrected in parallel circuits - there is a delay between conventional explosives and neutron guns firing to allow for the time it takes to compress the fissile cores - via high-current, fast vacuum tube switches called krytrons. However, Britain and America (for reasons discussed later, below) completely ignored this possibility, and the American Los Alamos nuclear weapons designer of devices Scorpion, Hamlet, Viper, Davy Crockett and King, Dr Theodore Taylor, dismissed the key Russian double-primary thermonuclear warhead design



when presented with it by author John McPhee: *"The shape tells you a lot about H-bomb design," Taylor said again. 'But not enough.' I drew a sketch of a hydrogen bomb showing a cylinder full of thermonuclear fuel, with two fission bombs, one at each end ... he said, 'Nice try, but that is not what happens'."* (This quote from J. McPhee, *The Curve of Binding Energy*, Farrar, Straus and Giroux, NY, 1974, p149. This dismissive error was then repeated again in response to Chuck Hansen's 27 August 1979 letter to Senator Charles Percy of Illinois, which contained the diagram shown below, which Howard Morland dismisses incorrectly in his book, *The secret that Exploded*. This casual dismissal of double primary designs may well mean American efforts to deduce

Russian nuclear weapon design from fallout samples by analogy to the designs America tested in the past, were plain wrong. Certainly, Russia tested two-stage, single-primary weapons; but their most compact efficient designs are provably double-primary for 0.1-1 megaton yields and use *two thermonuclear* stages for both cleaner and 1-100 megaton-yield fusion tertiary stages.)



**H-BOMB CROSS SECTION**

## *Chuck Hansen, 1979 letter to Percy*

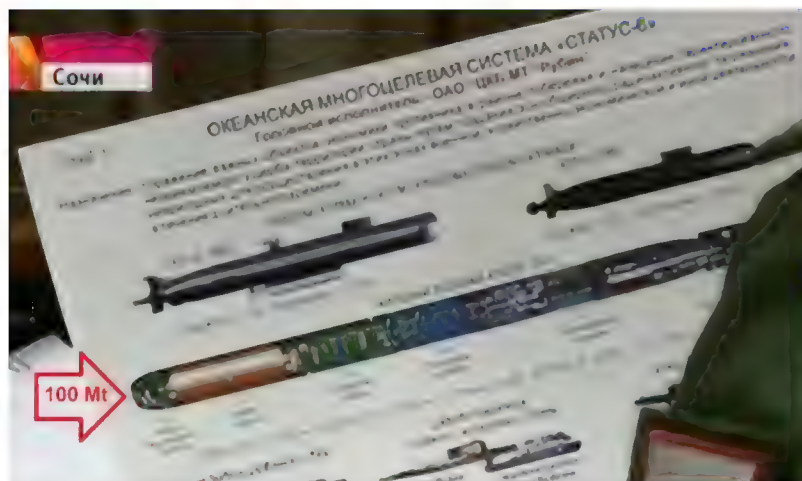
On 23 February 1958, Russia tested the new, radical Babaev-Trutnev compact design of thermonuclear weapon (*above*; detailed documentary evidence from multiple sources is provided later in this post), a pipe containing a spherical fusion stage sandwiched between two fission (primary) implosion charges, wired in parallel circuit for simultaneous firing via a krytron high speed, high current vacuum tube

switch. This was a relatively small diameter 860 kiloton deliverable thermonuclear weapon, weaponised by **Vladimir Fyodorovich Grechishnikov** (Deputy Chief Designer of VNIITE, Snezhinsk) and detonated at 2500m altitude (**the long range American detectors, which were less accurate than close-in Russian instrumentation, suggested that this Russian test 52, codenamed "Joe 46" by America, had a yield of 1.2 megatons and a burst height of 3200m**). Litvinov gives details of the development of this bomb into

modern Russian nuclear weapons in his report to the 3rd Historical Conference on the History of the Nuclear Weapons Complex of Russia, Snezhinsk, June 16-19, 1998, *Development of Nuclear Charges at the RFNC-VNIIT (1963-1976)* (first published on pages 135-145 of his book, *Nuclear energy is not only for military application*, published by the Ural Branch of the Russian Academy of Sciences, Ekaterinburg, 2002, and **now available online on pages 536-547 of his *Selected Works, published by VNIITE, Snezhinsk in 2014, linked here:***[http://elib.biblioatom.ru/text/litvinov\\_izbrannye-trudy\\_2014/go/0/](http://elib.biblioatom.ru/text/litvinov_izbrannye-trudy_2014/go/0/), whose page numbering we will quote from in the list of key Russian nuclear weapons design developments, *below*). Litvinov there explains that:

(1) between 1963-76 Russian nuclear charge designs were mastered for cheap factory mass production (serial production).

(2) the very high yield 1961-2 Russian nuclear tests of 20-50 megatons yield far exceeded the practical weight for missile warheads that could be delivered by affordable missiles, and when both Russian nuclear weapons labs (Sarov and Snezhinsk) tried to scale those designs down to give ~1 megaton from 300-500 kg mass, the results (quote from page 538 follows, ***emphasis added***): "in 1961-1962 were ***not crowned with success*** and this worried the military and the developers themselves. It turned out that it is easier to create powerful charges [20-50 megatons] than less powerful [~1 megaton] ones, that have a weight restriction [300-500kg mass]." Reports in recent years however indicate that **President Putin has brought back into production the 1961 designs for the tested 50 Mt (lead fusion capsule pusher) or untested 100 Mt (natural uranium fusion capsule pusher) version, to be used in his 32 Kanyon or "Ocean Multipurpose System Status-6" 24 m long, 2 m diameter, 100 ton nuclear underwater torpedo submarine drones, propelled by a nuclear reactor at up to 100 knots, with an operating depth up to 1000 m. This was announced by Putin on 1 March 2018 (below).**



Russian Channel One TV showed an official Russian report on its 100 megaton drone torpedo, showing a warhead 6 metres long and 2 metres in diameter, similar to the 8 m 1961 Tsar Bomba design (2 m of it was a parachute)

(3) To make progress with compact ~1 Mt warheads for missiles, they improved the fission primary stage designs, testing plastic explosive for implosion for the first time in February 1964, and then "octogen" (known in the West as the explosive HMX) for the first time by Russia in the 280mm diameter calibre nuclear shell tested on **19 October 1966 (Russian nuclear test 256, yielding 55kt)**, which "more than doubled" (page 545 quote) the yield of that device, due to the greater core compression achieved by using a better chemical explosive. *This is also of course of great importance to Russian thermonuclear weapons of higher yield, since more efficient primary stages release more x-rays and therefore enable greater fusion charge compression, giving a more efficient fusion burn.*

(4) They also improved the fusion charge design radically in 1965 by inserting tritium-deuterium gas into the hollow core of their fusion capsule (i.e. boosting the fusion capsule for the first time), which both improved the efficiency of their thermonuclear weapons, and also made possible cleaner devices (with greater



fusion capsule compression due to their improved primary stages, they could replace a fissile spark plug neutron source inside the LiD charge with neutrons from tritium + deuterium fusion, which then fission lithium in the surrounding solid LiD, producing more tritium), allowing the testing of the cleanest ever 140 kt Russian thermonuclear test at Semipalatinsk on 10 December 1972, which had fully *10 times lower fission product radioactivity* than the earlier **similar 140 kt total yield (of which about 6 kt was fission) relatively clean test of 15 January 1965 at Chagan River** (these data are from pages 541-542). In other words, they achieved well over 99% fusion yield (under 1% fission) in their 10 December 1972 test of 140 kt total yield (illustration of Russian >99% clean bomb design is shown below)!







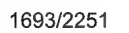
**Russian 96% fusion (clean), 4% fission underground test, Chagan River, January 15, 1965. Yield: 140 kt, of which 6 kt was fission (3 kt in each of two primaries).**











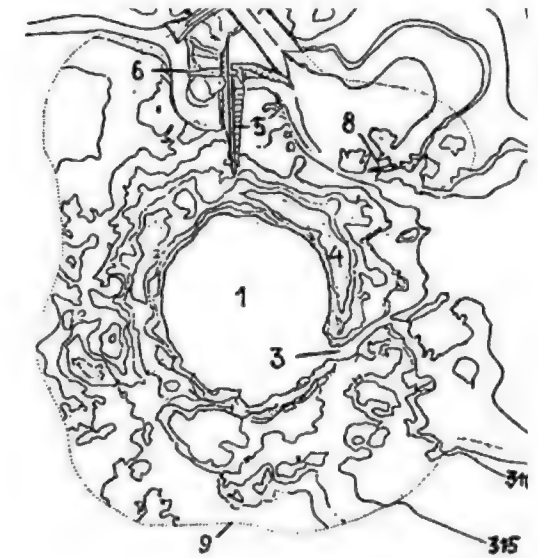
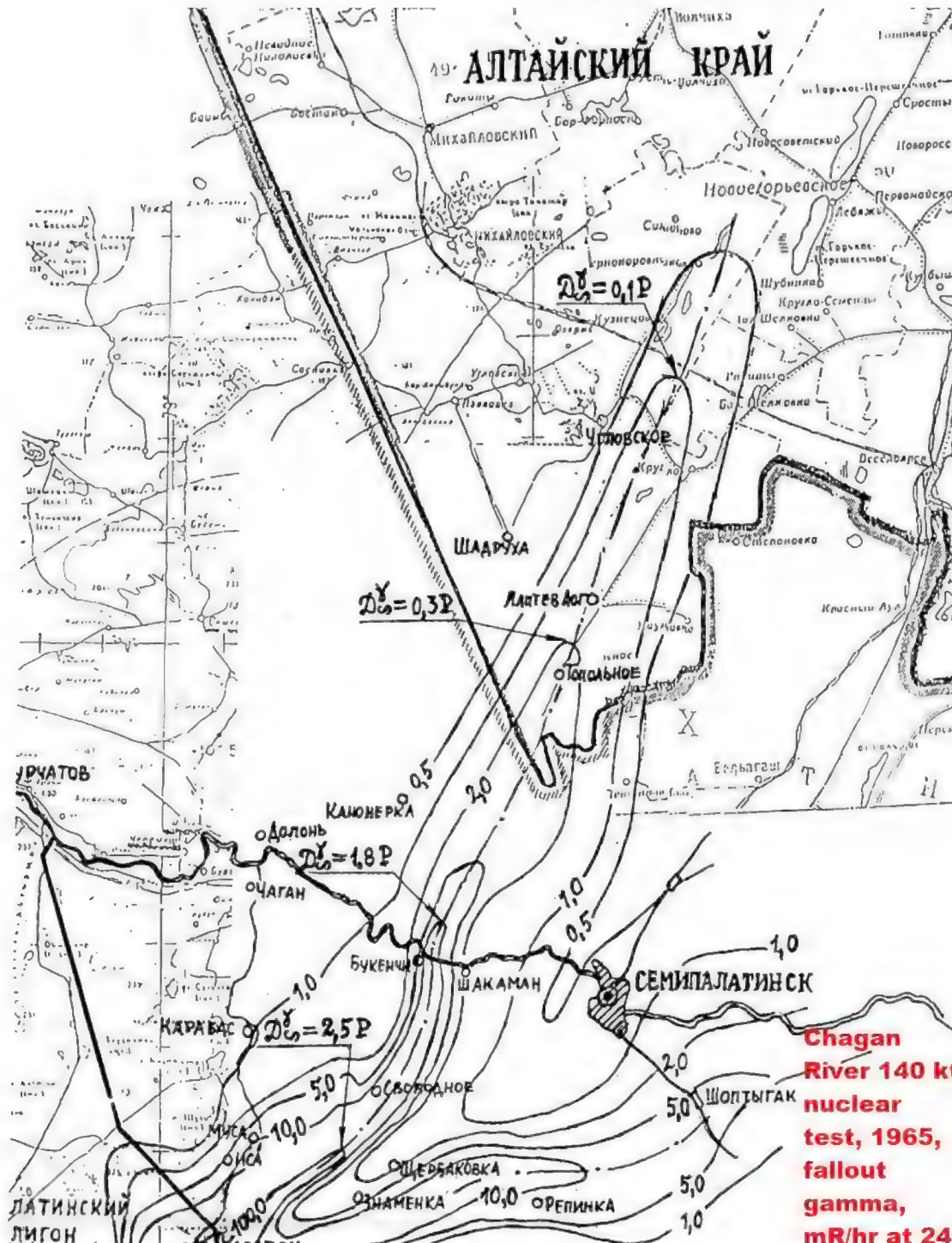


ABOVE: the world's first nuclear explosion-created freshwater lake, Lake Chagan. It was produced on 15 January 1965 at the edge of the Semipalatinsk Test Site in Kazakhstan using a 140 kt (96% fusion, 4% fission) thermonuclear weapon, detonated 178 m underground in saturated siltstone (12% water), employing only 6 kt of fission in two primary stages of 3 kt each. About 80% of the radioactivity was trapped underground and only 20% escaped into the atmosphere. The crater is 408 m in diameter and 100 m deep. The dose rate on the crater lip at 30 years after detonation was reported as 2.6 mR/hr, i.e. about 260 times the Earth's average natural background radiation level of 0.010 mR/hr, with the lake water in the crater containing just 300 pCi/litre. On the 10 October 1965, they detonated a 1.1 kt nuclear bomb at 48 m depth in weak siltstone rock under the dry clay bed of the Sary-Uzen stream. The crater produced was initially 107 m in diameter and 31 m deep, but when flooded it slumped to 20 m depth and 124 m diameter. Some 96.5% of the fission products were trapped underground, and the crater lip had a dose rate of only about 2.5 R/hr at 5 days after detonation, decaying to 0.050 mR/hr (including natural background) at 30 years later. (Data source: Milo D. Nordyke, *The Soviet Program for Peaceful Uses of Nuclear Explosions*, Lawrence Livermore National Lab., UCRL-ID-124410, July 1996, pp. 13-15.)

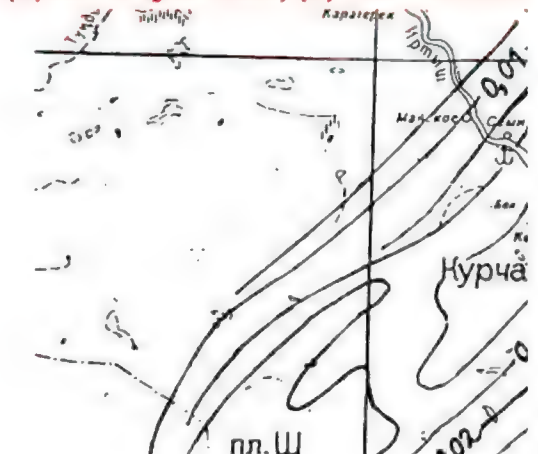
(5) In the later chapter, "Exploding Deuterium", Litvinov clarifies that although Russia failed to *directly initiate with PHYSICALLY SEPARATE fission stages* the fusion of pure deuterium in its nuclear weapon tests, Russia succeeded in pure deuterium fusion, provided that the deuterium charge was ignited by prior fusion from a *larger mass* of deuterium + tritium. See also the data from Russia linked [here](#), [here](#), and [here](#). (America never succeeded in initiating a fusion burn in a *PHYSICALLY SEPARATE* deuterium charge either, despite many entirely false claims to the contrary, alleging that the 1952 Mike test used a fission bomb to compress and heat a completely physically separated charge of deuterium. **This is false because the Mike fusion charge was not physically separate from fissile and**

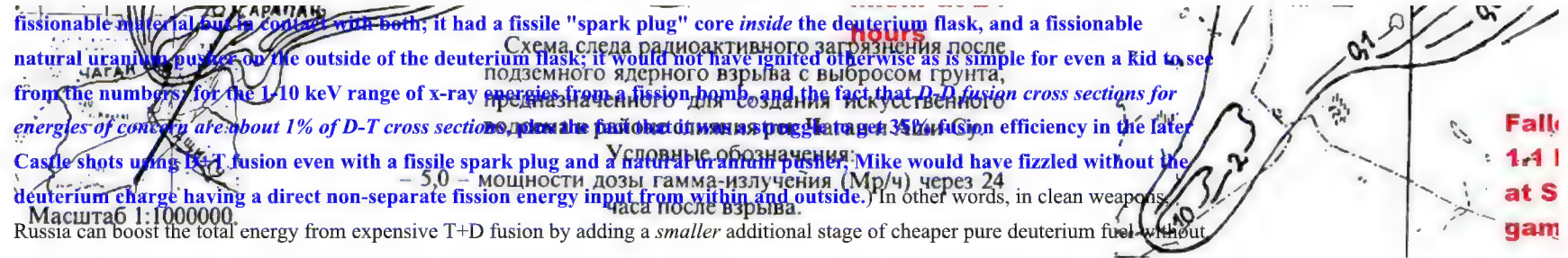






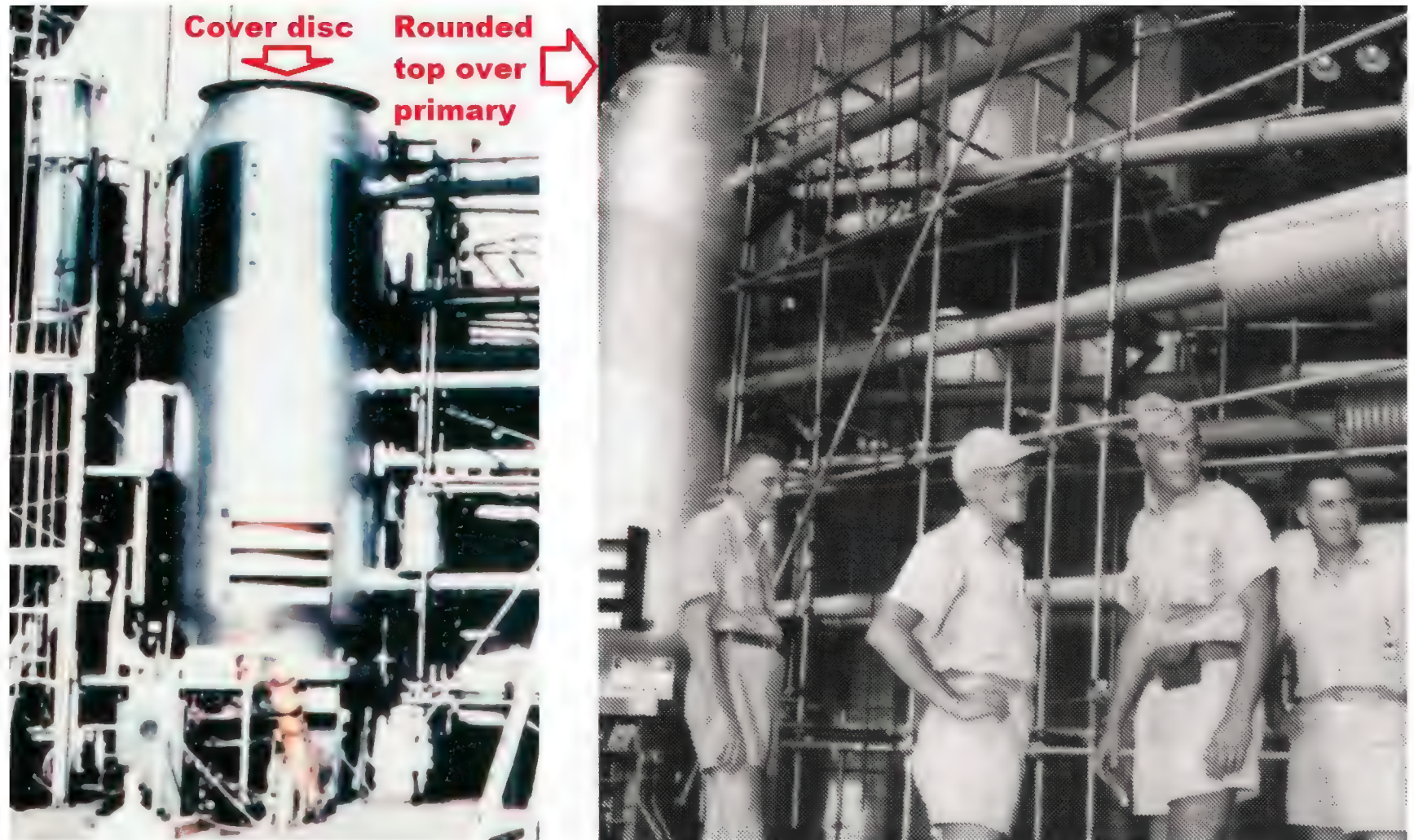
**Chagan River reservoir map (created after the nuclear test in 1965): (1) - internal reservoir, (3) water supply channel discharge dam, (6) bottom spillway (8) destroyed dam, (9) crater bound**





the spark-plug and uranium pusher America used in Mike; this smaller deuterium stage size compensates for the fact that pure deuterium requires a higher burn temperature. Naturally, once you have achieved a small very-high-temperature deuterium burn in a small mass (a very hard job and impossible to do directly with a fission bomb, as proved by the true nature of Mike as distinct from lying "simplifications" by those who want to trivialise the problems of warhead design to ban testing for improvements), you can then try to kindle into a bigger volume burn by multiplying up steadily via a large number of "Russian doll" stages (bombs within bombs), gradually increasing the power.





ABOVE: the 82 tons Mike top, in photos during assembly, is covered by a flat disc until Halloween 1952, when the Sausage's Dewar flask inside is filled with liquid deuterium, the fission primary is then inserted on to the top, and the flat cover disc is replaced by the founded top x-ray reflector over the primary. Photos are from Dr Frank H. Shelton, whose friend Dr Alvin C. Graves (who accompanied Shelton on his trip at Penney's invitation to the Australian-British nuclear tests at Maralinga, Operation Buffalo, in 1956) explaining how the primary, sparkplug (kindling), deuterium (fuel logs) and uranium pusher (hohlraum) in the Mike shot works on page 5-43 of his *Reflections of a Nuclear Weaponeer* (2nd edition, 1990): "First you need a match to start the fire; we use a fission bomb called the primary. Next, you wouldn't try to use the match to set one of the logs on fire, you would use some kindling [the central fissile spark plug]... That is Teller's 'New Super Bomb' invention ... Now you've got your logs burning ... You need a ... kind of furnace, the Germans call this a hohlraum, that propagates the fire ..." This is a very convoluted, pathetically expensive and low-efficiency dead-end in nuclear weapons design, one that











*ABOVE:* Ernest O. Lawrence with his colleagues from what is now called Lawrence Livermore National Laboratory, at Bikini Atoll in May 1956, preparing for their 3.53 megatons 85% clean (fusion) Livermore Redwing-Zuni test to make thermonuclear weapons fallout-safe as a deterrent (from Dr Frank H. Shelton's *Reflections of a Nuclear Weaponeer*, where Shelton called the most thoroughly fallout-documented test in history (as a result he testified that fallout was completely safe, see the 10 May 1957 *New York Times* article below, although he was unfortunately prohibited from *PROVING IT PUBLICALLY* due to *SECRECY* nonsense - Shelton being responsible for organising this). Livermore was outdone by Los Alamos, which fired Navajo, a 95% clean 4.5 megatons hydrogen bomb without the fissile spark plug that accounted for 10% of Zuni's 15% fission yield. Los Alamos used plastic foam to slow down the x-rays, giving enough time for primary stage neutrons to be channelled through the hollow centre of their lithium-6 deuteride Sausage, fissioning enough lithium into tritium prior to x-ray implosion. Zuni and Navajo were both rendered obsolete by Lawrence Livermore's John H. Nuckoll's 99.9% clean isentropically compressed pusherless nuclear tests at Christmas Island during Operation Dominic in 1962, the "Ripple" breakthrough (discussed in detail later in this blog post), and by Russian nuclear weapons development tests allegedly "peaceful" but in reality tactical neutron bombs, lasting a quarter of a century (from 1965 onward). On page 8-15, Dr Shelton points out that at the White House's 24 June 1957 Presidential Briefing propaganda event on "clean bomb", only the Livermore Radiation Laboratory designers of 85% clean Zuni were present (Ernest Lawrence, Mark Mills - drowned at Eniwetok in a helicopter crash during a rainstorm while preparing a clean bomb for testing the next year - and Edward Teller): "Conspicuous by their absence from the Presidential briefing were the Los Alamos weapon designers. After all, it was the "clean" [95% fusion] NAVAJO shot on Operation REDWING (1956), designed by LASL, that established the state-of-the-art in reduced fission weapon designs. 'We now believe that we know how to make virtually clean weapons, not only in the megaton range, but all the way down to small kiloton weapons,' Lawrence told the President." Shelton adds on



## CHAPTER 7

OPERA1



In May 1956, members of a University of California Regents committee accompanied E.O. Lawrence Grounds to review the ZUNI hydrogen-fusion nuclear weapon test. Left to right are: University of California James H. Corley; UCRL Physicist Harry Keller; Regents Gerald Hagar and Victor R. Hansen; UCRL Physicist and Gerald Johnson, in front of Brigadier General Alfred D. Starbird (person to Starbird's right is E.O. Lawrence); UCRL Physicists Carl Hausmann and Charles Blue; UCRL Director Herbert York; Regent Earl L. F.

page 8-16 that he briefed the Gaither Committee on 31 July 1957 on fallout, which led to the first recommendation for identifying US fallout shelters (ignored by Eisenhower but later implemented by Kennedy).

LOWIE, UCRL PHYSICIST CARL ROSSINI and CHARLES BUE, UCRL DIRECTOR HERBERT YORK; Regent EARL J. F.

FIGURE 7-23. UCRL GROUP AT PACIFIC PROVING GROUNDS



**MAY 10 1957**

## SCIENTIST DOUBTS FALL-OUT DANGER

**Atom Tests Can Be Safe for  
40 Years at Present Rate,  
Pentagon Aide Testifies**  
**NY TIMES**

Special to The New York Times.

WASHINGTON, May 9—Atomic testing can be continued at the present rate for another forty to fifty years and not create any serious danger from radioactive fallout, the chief atomic weapons scientist in the Defense Department believes.

This opinion was offered recently by Dr. Frank H. Shelton, technical director of the Armed Forces Special Weapons Project. He gave it when testifying before a House Appropriations subcommittee on the possible dangers to human health caused by the fall-out from atomic explosions. The testimony was released today.

NEW YORK TIMES, 10 MAY 1957,

Dr. Shelton was called before the subcommittee to discuss what had been described as a "great deal of concern" being expressed over the long-range effect on the human race of the fall-out. The subcommittee's chairman, Representative George H. Mahon, Democrat of Texas, had noted such "concern."

At one point during the closed door hearing, Mr. Mahon asked: "Could you not say that at the present rate we could go on for forty to fifty years without serious danger in so far as you know?"

"Yes," Dr. Shelton replied.

### Information 'Meager'

At the same time, Dr. Shelton conceded that information on world-wide fall-out from past atomic tests was "extremely meager." The Defense Department, he said, is taking steps to define more precisely the amount of radioactive debris in the air from atomic tests and the rate at which it is falling to the earth.

Dr. Shelton testified that it would require large nuclear explosions with a yield equivalent to 30,000,000,000 tons of TNT to

bring the average concentration of Strontium-90 in human bones up to the maximum permissible concentration. This would be equivalent to 1,500,000 atomic bombs of the size dropped on Japan in World War II.

Strontium-90 is a long-lived radioactive product of a nuclear explosion. In human bones it can produce cancer or leukemia. The maximum permissible concentration of Strontium-90 for general populations has been set at one-tenth of a microcurie for a person. A curie is a technical measurement of radiation, and a microcurie is one-millionth of a curie.

Dr. Shelton said that the maximum permissible concentration was five to ten times below the concentration necessary to produce a "barely detectable increase" in the rate of bone cancer or leukemia. His statement was based on the assumption, challenged by some scientists, that extremely small doses of Strontium-90 will not induce bone cancer.

Dr. Shelton likewise tended to minimize the threat of external radiation from fall-out materials. To increase the world-wide external radiation exposure by 10 per cent, he said,

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FIGURE 6-24 MARK-17 THERMONUCLEAR WEAPON AND F. H. SHEL

The gigantic advantage of deuterium fusion is that *you don't need to create a large number of neutrons ahead of fusion* to fission lithium in order to produce tritium. Lying simplified pictures of nuclear warheads with lithium deuteride secondary stages, often also showing a neutron shield to prevent neutrons from the primary stage from "pre-initiating" the secondary stage (regardless of whether the secondary stage contains fissile material or not) omit the entire problem that lithium deuteride must be irradiated with neutrons to produce tritium



Statement Before the Department of Defense Subcomm  
Committee on Appropriations, House of Representat

by

REAR ADMIRAL EDWARD N. PARKER, USN  
DEFENSE ATOMIC SUPPORT AGENCY  
23 March 1960

Radioactive Fallout From Nuclear Explosions

To a degree this controversy has existed because we were with what appeared to be a new phenomenon. There has been wi  
ignorance of the facts concerning radioactivity not only amor  
also among the "experts." This is not surprising when one co  
broad spectrum of disciplines which are involved in the topic  
its effects. Nuclear physics, meteorology, soil science, pla  
medicine, genetics, and political science all have important  
on this subject and most studies have involved groups of peop  
normal differences of opinion or of emphasis expected in any

prior to D+T fusion becoming possible (otherwise you have no tritium). The 85% clean 3.53 megaton Livermore Zuni test of Operation Redwing at Bikini Atoll in 1956 contained a fissile sparkplug which accounts for about 10% of the 15% fission yield (Zuni contained a lead pusher around the lithium deuteride instead of natural uranium), but the 95% clean 4.5 megaton Los Alamos Navajo test of that series

had an entirely clean second stage (no fissile spark plug). But Navajo had to eliminate the neutron interstage shield (unnecessary if you use non-fissile secondary stage) and to use a neutron channel to guide neutrons from the primary stage into the hollow cylindrical lithium deuteride secondary stage, to enable some of the lithium to be fissioned to produce tritium, *BEFORE* the secondary stage was compressed by x-ray ablation of the lead pusher on the outside of that secondary cylinder. So Navajo needed to have a significant primary yield to release those neutrons, and the design would fail if its primary stage size was reduced to try to reduce fission yield to below 5%. So to make further progress on cleaner weapons, you need either immense, isentropic compressions of the secondary stage that allow neutrons from a non-fissile D+T spark plug within lithium-6 deuteride (or natural lithium deuteride, in the best designs) to work, which has the problem of the radioactive decay of the tritium, or you must consider overcoming the hurdle of D+D fusion to achieve a long-shelf life clean nuclear warhead that doesn't require top ups to compensate for the 12.3 years half life of tritium. The key issue with D+D fusion is that, having a cross section 100 times less than D+T fusion, you need to use isentropic not shock compression to concentrate a lot more x-ray energy into compressing it to extremely high density to get really efficient fusion. But having done so, you then have the advantage of a very clean, very cheap, very long-shelf-life bomb:

**"The Mike device contained several dozen litres of liquid deuterium; however, fusion efficiency was probably not much greater than 15%, and 8 megatons (nearly 80%) of Mike's total yield came from fission of plutonium and uranium-235 [in the sparkplug radially central inside the cylindrical Dewar or Sausage of liquid deuterium] ... (If the Sausage contained 1000 litres of liquid D, then "burn" efficiency was around 6%.)" - Chuck Hansen, Footnote 93 in *Swords of Armageddon*, version 2.0, volume 3, pages III-38 and III-39. (This contains calculational errors.)**

Boris Litvinov's "Exploding Deuterium" chapter also examines the use of uranium-233 in nuclear weapons, which is made in reactors by irradiating thorium-232 with neutrons. There is an important storage problem, since Litvinov states that this uranium-233 is contaminated by 0.1% uranium-232, which has an alpha decay chain which includes thallium-208, which releases high energy 2.6 and 0.6 MeV gamma rays, so that a year after production, a mass of 1 kg of U233 or 1 g of U232 gives a gamma dose rate of 10 R/hour at 50 centimetres distance. This makes U233 weapons very difficult to service safely! *However, Russia used U233 in place of plutonium in its RDS-37 aka "Joe-19", the Russian's celebrated 1.6 megatons, 22 November 1955 two-stage thermonuclear weapon, according to Dr Frank H. Shelton's Reflections of a Nuclear Weaponeer, page 7-27, which cites reference 24 on page 7-68, which is the Top Secret classified 20 February 1956 U.S. Joint Chiefs of Staff, "Intelligence Information for Joint Intelligence Committee", which says that the RDS-37 fallout contained evidence of U233, U235, U238 and LiD, but no plutonium!* I'm just quoting here, and am curious as to how they could rule out the presence of plutonium when of course neutron capture in the U238, which definitely was present, yields U239 which quickly decays into Np239 and then into Pu239 within days! You also get smaller quantities of higher mass isotopes of plutonium, from multiple neutron captures in U238. Maybe they had big samples of fallout and excellent radiochemistry, and deduced that *all* the plutonium present in the fallout was the result of neutron captures in U238, and none had been present initially in the bomb before firing. If so, hats off to them!

TOP SECRET

RESTRICTED DATA A

DEFINED BY ATOMIC ENERGY ACT OF 1954

ANNEX A - GENERAL IMPROVEMENTS OF NUCLEAR WEAPONS						
AREA	OBJECTIVE OF TESTING	GAINS SINCE LTD TREATY	PRESENT STATUS	PROBABLE GAINS THROUGH CONTINUED TESTING UNDER LTBT	POSSIBLE LONG TERM TECHNOLOGICAL BREAKTHROUGHS	HOW CRITICAL IS THIS TO US CAPABILITIES OR WHAT LOSSES CAN WE STAND?
EFFICIENCY (use of Pu 239, U235, T)	Reduce the amount of fissionable and fusionable material required to obtain the desired weapon performance. Savings in Pu 239 and T are particularly significant since they are not naturally occurring and must be produced by neutron bombardment in reactors.	<b>1966 US Joint Chiefs of Staff Top Secret report calls for minimal T use as a long term aim. E.g., isentropic compression of D+D fusion capsule within a Li6D shell!</b>			(1) Development of all fusion weapons with minimum dependence on T.	(1) Efficiency of use of U235 does not appear to be critical problem since anticipated weapon requirements at least up through 1973 are well below production. Economic strength of US and availability of natural resources sufficient to improve production if necessary.  (2) Efficiency of use of Pu and T could be important (based on present production estimates) if ABM systems small R/Vs using large quantities of reactor products are deployed in large numbers. Presently anticipated requirements are close to estimated production. However, more production is possible at great expense thru construction of more reactors.

CK2349562865-jcs-test-ban-1966

ABOVE: the 1966 Top Secret US Joint Chiefs of Staff report, *Study of National Security Factors in a Comprehensive Test Ban Treaty*, Appendix C, "Criticality of Nuclear Testing to US Nuclear Weapons Technology", Annexes A and B called for vital long-term improvements to US nuclear weapons designs, including reduction of U235 (or alloy) and T (tritium) dependence, e.g. with efficient isentropic compression of pressurised D capsules replacing T+D, and also enhanced prompt gamma ray weapons for maximising EMP strength (this is done by putting a nickel-chromium shell around the fusion capsule in a neutron bomb, to convert a fraction of the neutron energy into high energy gamma rays). These lengthy annexes also called for reduced warhead costs, increased warhead shelf-life, directed X-ray output (i.e. simply putting the bomb into a metal tube, open at one end, before the development of nuclear pumped x-ray laser Excalibur by Livermore a decade later), enhanced ground shock warheads (e.g. hardened earth penetrator warheads), and reduced fission yield at low total yield to allow cleaner tactical warheads.

ANNEX B - TAILORED OUTPUTS OF WEAPONS						
WEAPON EFFECT	CHARACTER OF WEAPON	GAINS SINCE LTB TREATY	PRESENT STATUS	PROBABLE GAINS THROUGH CONTINUED TESTING UNDER ITBT	POSSIBLE LONG TERM TECHNOLOGICAL BREAKTHROUGHS	HOW CRITICAL IS THIS TO US CAPABILITIES OR WHAT LOSSES CAN WE SUSTAIN?
A. ENHANCEMENT AND SUPPRESSION OF EFFECTS						
1. Gamma Rays	Increase the fraction of energy produced in a nuclear explosion which is emitted as gamma rays. Such a weapon would provide increase over present weapons in EMP effect and transient radiation effect on electronic systems. Potential applications in strategic defense, ballistic defense, and as a means of understanding the generation of electromagnetic pulse (EMP) effects.					Criticality of this is difficult to assess since EMP generation and effects are poorly understood. Development of these weapons is not critical to understanding EMP and TREE effects. Nuclear testing is required to develop these weapons and be assured of output.

← **EMP effect is enhanced by neutron bombs with chromium and nickel casing to convert neutron energy into gamma rays (1966 JCS Top Secret report)**

TOP SECRET  
RESTRICTED DATA  
AS DEFINED BY ATOMIC ENERGY ACT OF 1954



Russian VNIIFT nuclear warhead design laboratory film of t...



(6) A 2005 film (embedded above, and [linked on YouTube here](#)) by the Snezhinsk nuclear weapons lab about their nuclear weapon "products" (extensive stills from this film are reproduced below, showing the range of nuclear missile, bomb and cannon shell warheads they developed) adds further information on how Russia managed to reduce the weight of its MIRV nuclear warheads. Translating from the Russian voice narrative commentary of the film: *"a Russian patent was obtained for the design of the [thermonuclear weapon casing or] container by the specialists of the two institutes under the leadership of Petrov. In close cooperation with the Institute of Superplasticity of Metals, the city of Ufa, a new technology was developed for manufacturing multi-profile parts from hard-to-form alloys based on nickel-titanium and aluminum using the effect of superplasticity. ... the new technology makes it possible to reduce the weight and increase the strength of parts, and for their manufacture to use hard-to-deform superalloys. ... Product 244 was the first mass-produced atomic small-sized bomb for equipping front-line aircraft weighing 55 times less than the mass of the product 202. Product 245 was the first mass-produced thermonuclear bomb for equipping strategic aviation weighing five times less than the mass of the product 202. When creating products 244 and 245, conceptual provisions were developed for the development of single bombs for a wide range of carrier aircraft ... more than 20 samples of aerial bombs of various calibers were developed and designations for creating a family of them were awarded the State Prize of the USSR. Product 6 was a nuclear warhead of an anti-aircraft guided missile ... Product 30: this is the first development by the Institute of Nuclear Ammunition to equip the ground-based missile system UR-100 ... Product 269 is a nuclear warhead of an operational tactical single-stage missile ...*

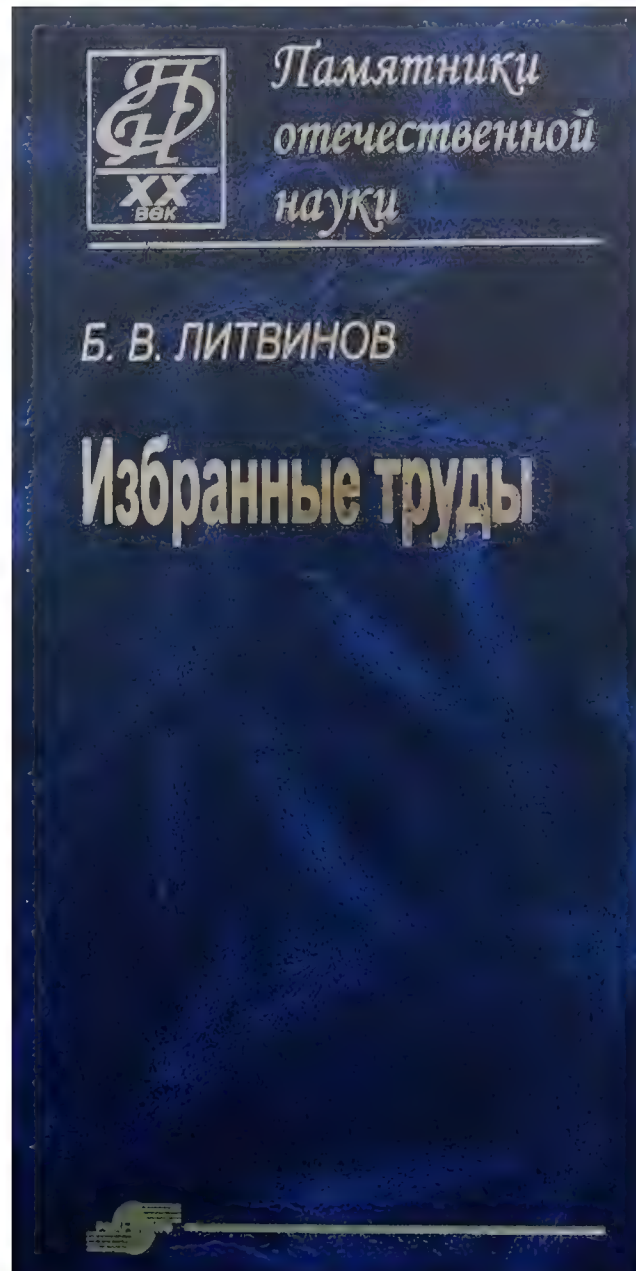
*"The presented nuclear munitions of the missile systems of the navy allow us to trace the origin and development of the least vulnerable naval component of the country's strategic nuclear forces of the product 255a 13 nuclear munition of the R12 missile with a detachable warhead of the D2S complex. ... Product 3 combat equipment of the R21 missile with a detachable warhead of the complex 24, the first domestic complex with the launch of a missile from a submerged position. ... Product 15 combat equipment rocket R27 medium range ... Product 42 combat equipment of the R27 missile to the complex was intended to destroy aircraft carriers and electronic missile defense systems of a potential enemy. Product 46 ensuring the stability of ammunition, the operation of electronic countermeasures and air shock in the conditions of Western firing, the creation of ammunition 46, ensuring the effective use of the T9 complex. Products 82 and 83 combat equipment, the R-27 missile, the first missiles of the naval fleets that could be equipped with both monoblock main part of the v82 nuclear weapon and those sharing the main part with three nuclear weapons of type product 83. ... The ammunition 82 automation system was improved compared to the automation of ammunition 15 and 46. ... Products 94 and 95 were developed for the value of the first*

*complex of the methodological purpose of the navy of the 3rd generation; this can be equipped with a single-block nuclear warhead 94 or divided main and part of the firing of warheads nuclear ammunition 95 individual targeting at specified trailer points. ..."* (For clear photographic definitions of the various "Product" numbers assigned to Russian nuclear warheads, see the stills from their film summarising their warheads, below.)



**Celebrated Russian nuclear bomb designer Boris Vasilyevich Litvinov**





РОССИЙСКАЯ АКАДЕМИЯ НАУК

RUSSIAN ACADEMY OF SCIENCES

Российский федеральный ядерный центр —  
ВНИИ технической физики имени академика Е. И. Забабахина

Russian Federal Atomic Energy Center —  
Academician E. I. Zababakhin

Б. В. ЛИТВИНОВ

B. V. LITVINOV

ИЗБРАННЫЕ ТРУДЫ

SELECTED WORKS

Издательство РФЯЦ — ВНИИТФ  
Снежинск 2014

Publishing House  
Snezhinsk

BELOW: a declassified data summary of a wide range of Russian nuclear weapons, their designers, and the use of the weapons by various delivery systems from the VNIIFT nuclear warhead design laboratory, which designed 100% of the currently stockpiled Russian strategic freefall nuclear bombs, and also 100% of currently stockpiled Russian tactical nuclear warheads (both freefall aircraft delivery bombs and



RUSSIAN ACADEMY OF SCIENCES

Russian Federal Nuclear Center  
Academician E. I. Zababakhin Institute of Technical Physics

B. V. LITVINOV

## SELECTED WORKS

Publishing House RFYATS VNIITF  
Snezhinsk 2014

### Pages 536-547:

#### DEVELOPMENT OF NUCLEAR CHARGES AT THE RFNC - VNIITF (1963-1976)

B. V. Litvinov

Development of nuclear charges at the RFNC - VNIITF (1963-1976) 537

The second, but no less important reason for classifying 1963 as a turning point in the charge industry is the transition, starting this year, to the physical schemes and designs of nuclear charges, which became the basis for the subsequent creation of that generation of nuclear charges, which now forms the basis of Russia's nuclear weapons. The year of the end of this period can be

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B. V. Litvinov

to name the same 1976, since by that year most of the developed nuclear charges had been mastered by serial production ... **[mass production]**

of 50 and 100 Mt TE have no future. The work plans of our institute for 1963 included the creation of a nuclear charge with an energy release of 100 Mt TE, since the KB-11 charge tested on October 31, 1961

at that power could not be placed in any carner, except for a specially modified TU-95

We assumed to make our own version of the charge with the same energy release according to the scheme proposed at our institute by L. P. Feoktistov, M. P. Shumaev, E. N. Avrorin and B. M. Murashkin and successfully tested by our institute (NII-1011) in air tests in 1962

in charges of lower energy release. In rocket design bureaus, and above all in the Design Bureau headed by Academician V. N. Chelomey, a heavy rocket capable of lifting over 20 tons of payload was developed specifically for our charge. All this did not seem to portend the withering of the military's interest in powerful and super-powerful nuclear charges and missile delivery systems, but more and more information was received that the Americans

had chosen a different path; namely, the creation of nuclear charges with an energy release of up to 1 Mt and a mass of 300 to 500 kg, which it required for their delivery to the targets much less powerful missiles than those that were created by us. The work and, accordingly, the aerial nuclear tests of KB-11 and NII-1011 in this direction in 1961-1962 were not crowned with success, and this worried the military- and the developers themselves. It turned out that it is easier to create powerful charges than less powerful ones, but having a mass restriction at the same time it began

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to develop at the Research Institute- nuclear charge with low fragmenter such a nuclear charge to power operating only on gaseous deut device for physical experiments

The development of ideas in the conduct during 1965-19 various designs of nuclear expl for industrial, not military use. N but the negative results were e us to establish the area of exis explosive devices. Let us list so obtained in the RFNC-VNIITF ii experience and the SINE:

First, the creation, together v explosive device for nuclear exp testing of such a device in Decr than 100 kt TE, its fragmentation which was 10 times less than explosion to form a reservoir or 1965. Such was the progress excavation in 8 years. Unfortun Peaceful Explosions (1974), nu prohibited.

Secondly, the creation of sp for physical experiments, in whi explosion on materials and obje

Thirdly, the creation at VNII device with low fragmentation e ores and other minerals. In pai September 1972, the crushing deposit in Khibiny. The apatite e and immediately after extraction

The development of nuclear the line of creating industrial e: 1965-1968, a nuclear explosive de gas flows from the lower horiz

artillery fired projectiles of various kinds). This film concludes with the message: "Postscript: In the real conditions of Russia's current position in the world community, and the state of the Russian army, Russia's nuclear weapons remain a reliable guarantor of strategic stability in the world, independence, integrity of the country's military and economic security. - From the (VNIIFT nuclear weapons lab) authors."





**KB-2  
ВНИИТФ  
разработано  
~ 90  
ядерных боеприпасов  
разных типов и назначений**

**(KB-2 VNIITF DEVELOPED 90  
NUCLEAR WEAPONS FOR ALL  
PURPOSES)**

**(100% OF ALL STRATEGIC  
OF ALL TACTICAL BOMBS)**

**ВМФ** ЯБП РК СН  
авиабомбы стратег

**ВВС** авиабомбы стратег  
авиабомбы Ф

**СВ** ядерные артиллерийские

**РВСН** ЯБП РВСН

**VNIITF RUSSIAN NUCLEAR WEAPONS SUMMARY FILM**

**Рабочая группа 80**



**Фильм посвящен**  
**(English: This film is dedicated to)**

**50-ти летию  
РФЯЦ ВНИИ**

**60-ти летию  
ПОБЕДЫ**

**(English: Working group 80)** **(... To the 60th Anniversary)**

**Лауреаты PRIZES**

- Ленинской Премии - 4 **LENIN - 4**
- Государственной Премии СССР - 53 **USSR**
- Государственной Премии РФ - 6 **Russian**
- Государственной Премии им. Г.К.Жукова - 1 **Fed.**
- Премии Правительства РФ - 7 **State**
- Government**
- Почетные звания РФ Honorary**
- Заслуженный деятель науки РФ - 1 **titles**
- Заслуженный конструктор РФ - 4 **(Russian**
- Federation)**
- Награждения AWARDS**
- Ордена и медали СССР и РФ - около 1400 **1400**

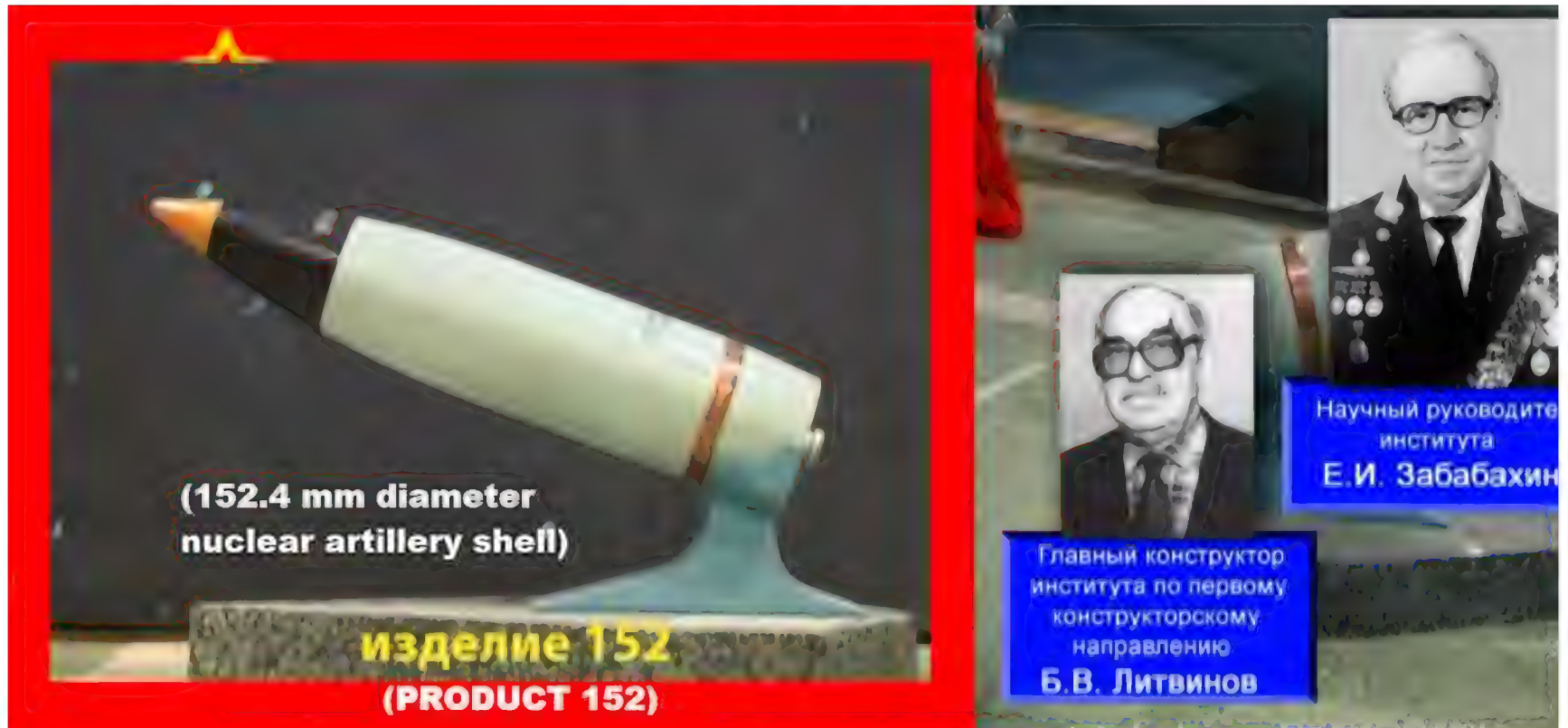
**Ядерные NUCLEAR боеприпасы A**

**ВВС и м**

**AIR FORCE AND MARINE AVIATION**





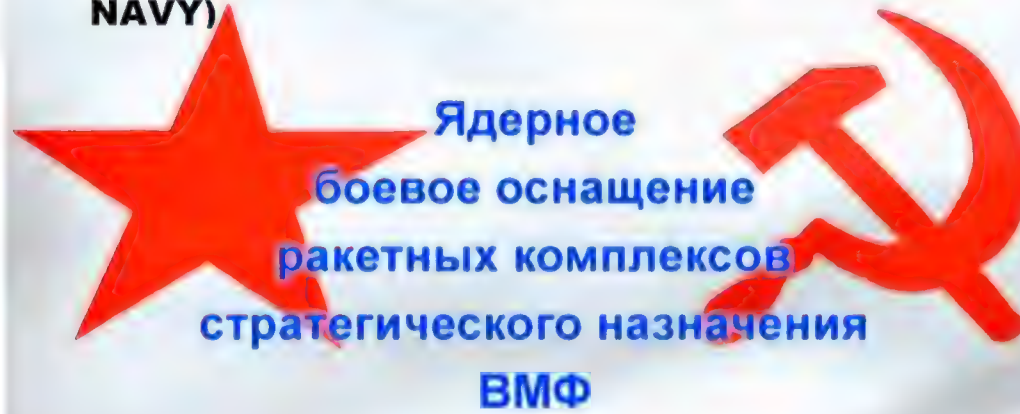






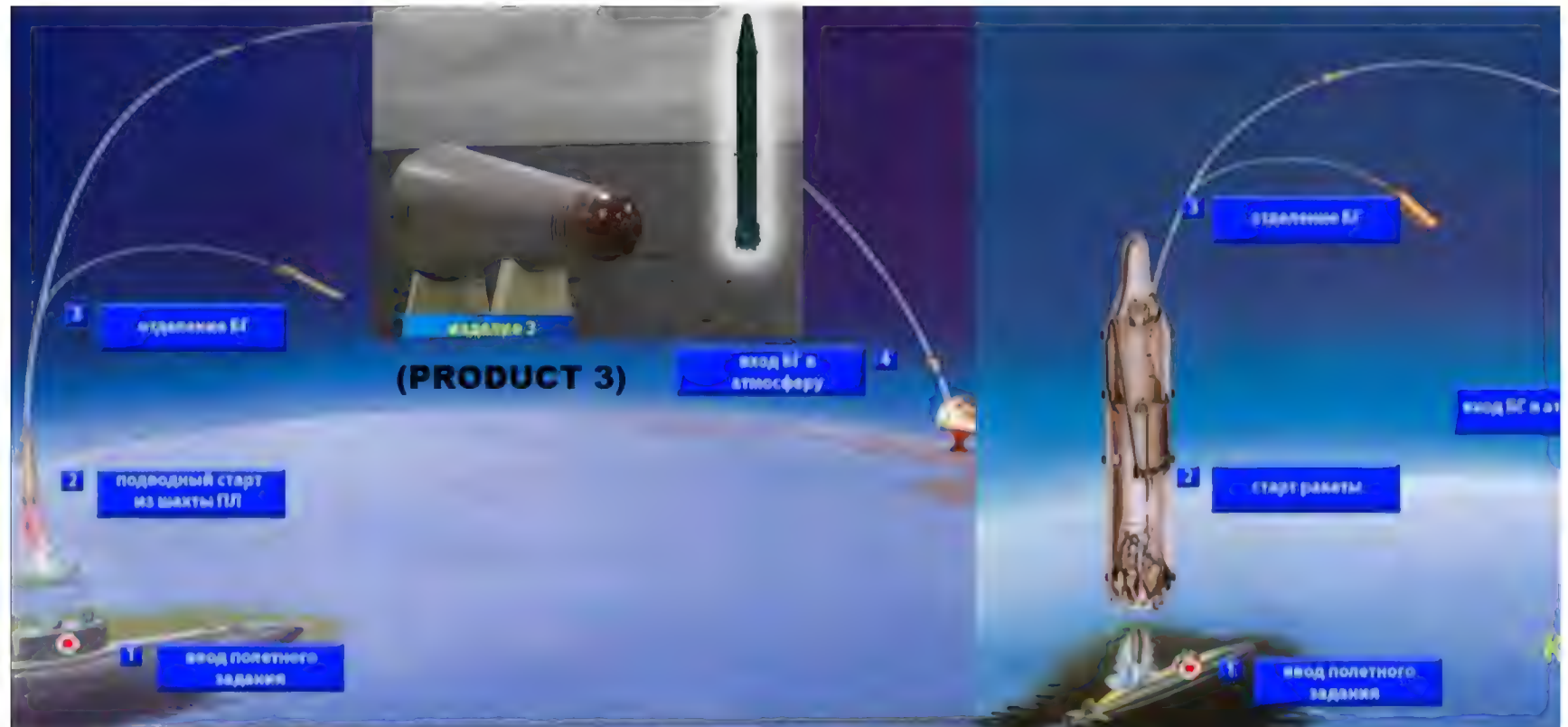


**(STRATEGIC NUCLEAR MISSILES OF THE  
NAVY)**

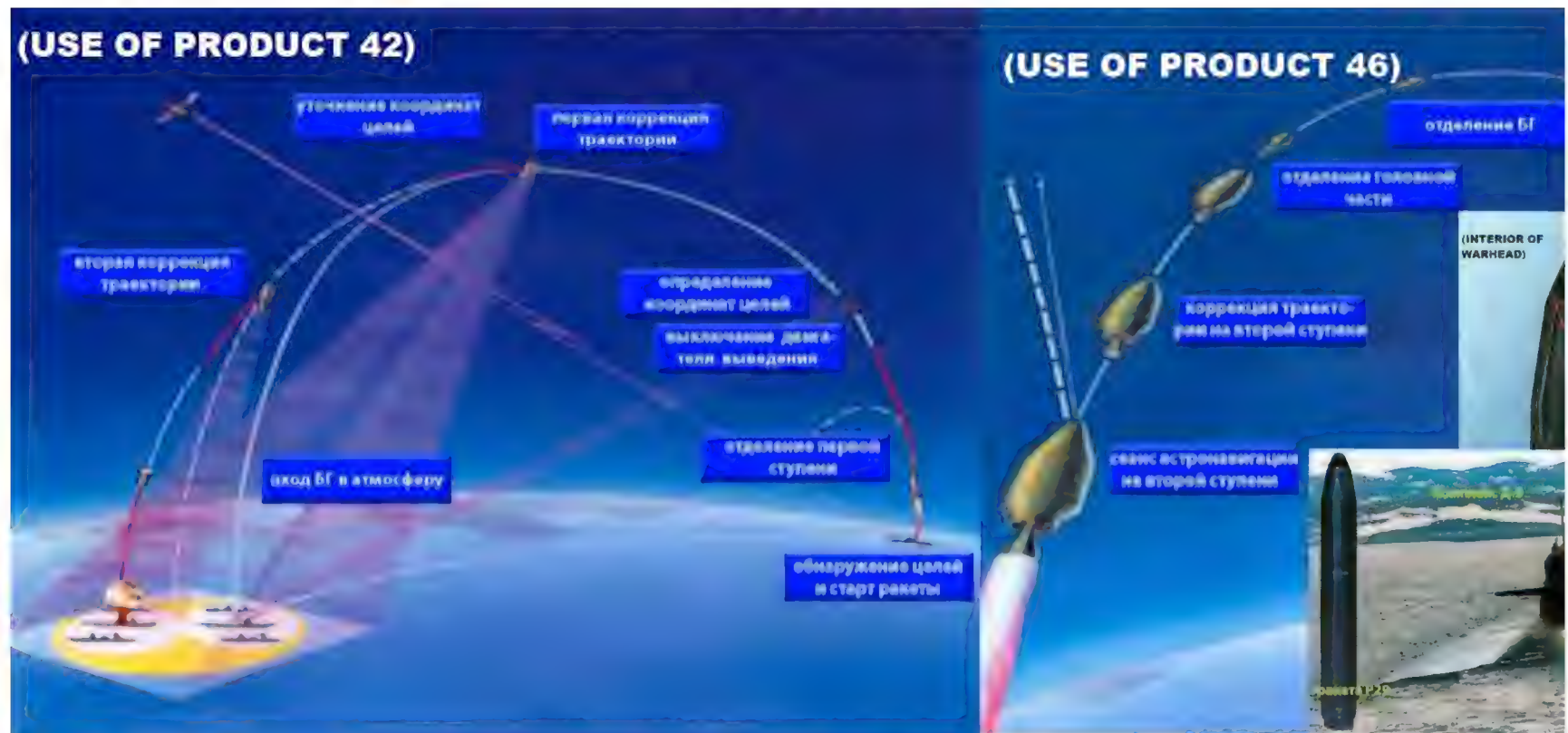








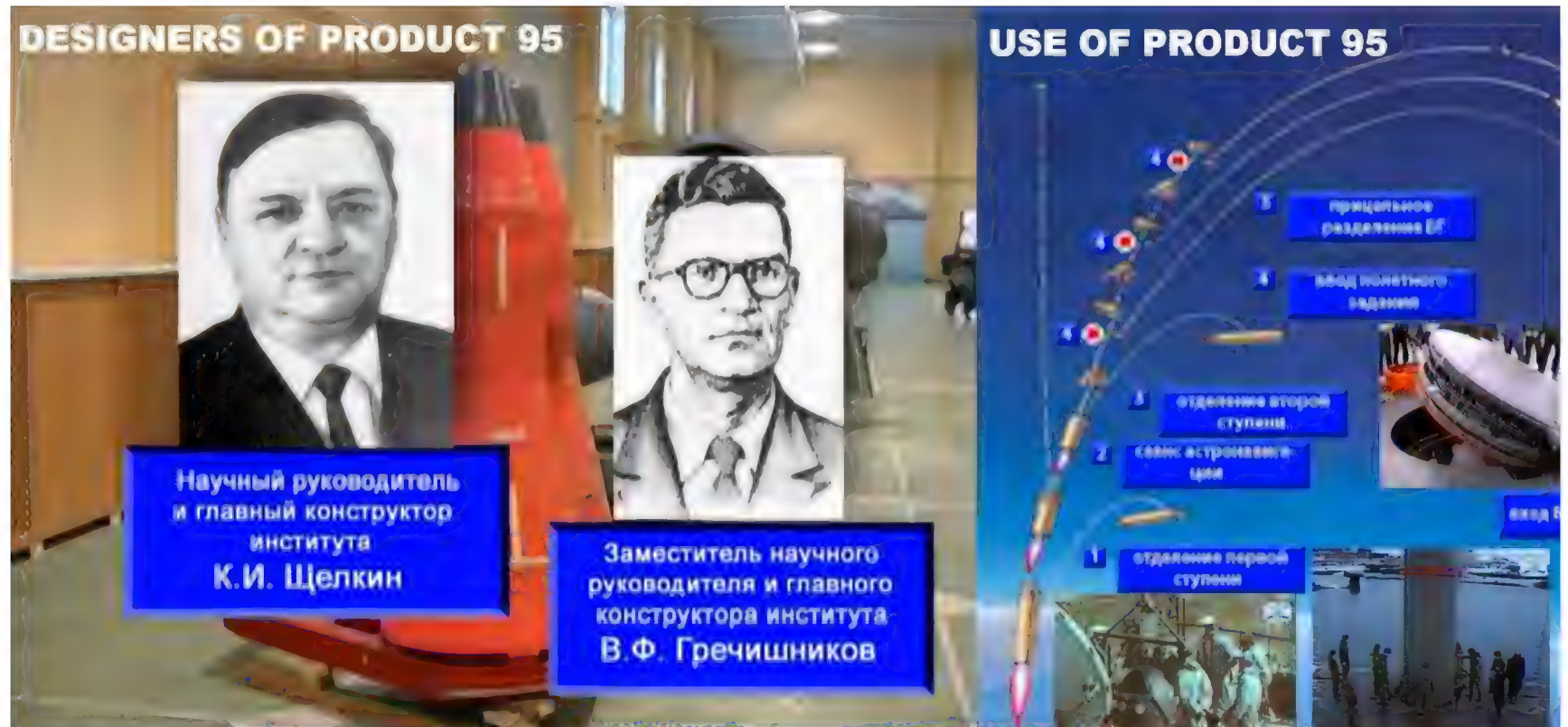
















The film stills above taken from the 2005 film dedicated to the 60th Anniversary of the USSR's Victory in WWII, made by the VNIITF Russian nuclear weapons design laboratory at Snezhinsk, and it summarises the warheads, their purposes, delivery systems, uses, designers, philosophy, and so on. Note that one of the weapons designers shown to be responsible for the 1970s MIRV narrow-diameter Snezhinsk nuclear warheads (Product 83 with a mass of 170 kg was tested on 2 November 1972 yielding 165 kt, and Product 95 with a mass of 210 kg was tested on 23 July 1973 yielding 212 kt) is **Vladimir Fyodorovich Grechishnikov (1917-58)**, who died in 1958; the point is that the dual-linear implosion primary design of thermonuclear weapon (simply a pipe with two melon-shaped linear implosion fission bombs in it, separated by a capsule of fusion fuel) was developed by 1958, earning Grechishnikov a Lenin Prize. Grechishnikov, a design engineer, had earlier appropriately worked on other straightforward and low-cost solutions for Russia, namely designing the cheap, easily manufactured, but efficient tank and aircraft engines during WWII that helped Russia win decisive battles by numerical superiority. The hard fact that the laboratory credits him with the MIRV warhead designs of the 1970s, despite his death in 1958, proves that the dual primary design first tested in 1958 was used in those 1970s MIRV warheads. Grechishnikov's background in Russian tank designs of WWII is not an aberration of Russian nuclear weapon design, witness that in **"Designer N L Dukhov and his School" published in 2004 by JSC South Ural Publishing House, Chelyabinsk**, Dukhov is another similar, WWII Russian tank designer who ended up a nuclear weaponeer, **deputy chief designer of KB-11 (aka Arzamas-16, or Sarov) developing over 10 years the neutron initiators for the first generation of Sarov's deployed nuclear weapons across 17 delivery systems including the R-7 missile and the T-5 nuclear torpedo!**





## Transportation of warhead bus to a Russian ICBM silo

The weapons designer with the big eyebrows in the film, shown both as a designer of the world's smallest diameter nuclear artillery shell and with President Putin on the latter's visit to the lab by helicopter in 2000, is the late **Boris Vasilievich Litvinov (1929-2010)**, a **prolific author of scientific papers** and also books hankering after the restoration of Russia as a great power. Russia's version of Edward Teller. In 2019, a 506-page book of tributes to his work was published in Russia, "**BORIS LITVINOV: FACETS OF PERSONALITY**", published in 2019, which begins with the following quotation from Litvinov: "By the way, a bomb designed for rapid self-destruction, makes it easier to create long-term useful technologies." (VNIITF also has a 1 hour recent film about him on their

website, quoting his political books, with his colleagues talking how he remembered the German attack of 22 June 1941, how Russian victory in the war led to progress, and prestige now needs to be restored following the tragic break-up of the USSR. You get the idea...) **Boris Litvinov is one of the four authors of the article "History of the nuclear weapons industry" in the Russian journal *Atomic Energy*, Vol. 86, No. 6, 1999, pages 402-410), which states:**

"The creation of the nuclear weapons industry in the Soviet Union is correctly considered as one of the greatest achievements in Russian history. It has been accompanied by the defeat of fascist Germany and space flights to constitute the Soviet Union as a superpower. ... The stocks of uranium (100 tons) accumulated in Germany passed to Soviet physicists in 1945 and were used to construct the F-1 reactor in Laboratory No. 2, which was the first such reactor in the USSR and in Eurasia. ... 31 theoreticians ... participated in various ways in the work on the RDS-37. ... The energy release was 1.6 Mt of TNT equivalent. The USSR was ahead of the USA, which tested a similar thermonuclear aircraft bomb half a year later on May 21, 1956. ... In 1956, NII-1011 had obtained a commission to develop an aircraft bomb containing a gigantic thermonuclear device ... mass about 25 tons. The bomb should have been dropped for bombardment purposes by M-2 and Tu-95 aircraft. Design studies showed that such a bomb could be carried to the target only by the Tu-95 after its bomb bay and framework had been modified provided that the dimensions were reduced to 1.8m in diameter and 8m long with a mass of not more than 25 tons. NII-1011 in 1956-8 worked on the design of that bomb and performed theoretical calculations on the thermonuclear device, but in connection with the moratorium on nuclear tests, manufacturing the body parts was halted, and the only body remaining after the summer tests was destroyed. The work on the device was halted. Nuclear tests were renewed on September 1, 1961. A body was prepared for the gigantic bomb. On October 31, 1961, the world's largest thermonuclear device was exploded above Novaya Zemlya, which had been developed at KB-11 under Sakharov's direction. It was designed for a total energy production of 100 Mt of TNT equivalent, and the device was tested at a height of 4000 m for half the energy production in order to reduce the radioactive contamination of the atmosphere and the effects of the shock wave. ... Somewhat later, a similar thermonuclear device yielding 20 Mt was proposed by KB-11. Out of the gigantic devices tested, only two were adopted as weapons and were for a certain time part of the strategic rocket armament: one developed by NII-1011 and the other by KB-11. ... With the start of reform, the attitude of the country's government to nuclear weapons began to change. The nuclear weapons industry attained its apogee at that time. It was apparent that its experts could resolve any problem in supplying nuclear weapons to the Soviet army although there was an ongoing and considerable lag in Soviet computing behind American."

ABOVE: **30 August 2000 Secret CIA Intelligence 23-page technical Memorandum, "Evidence of Russian Development of New Subkiloton Nuclear Warheads", now declassified with deletions at [https://www.cia.gov/readingroom/docs/DOC\\_0001260463.pdf](https://www.cia.gov/readingroom/docs/DOC_0001260463.pdf)** states that these 0.3 kt tactical/battlefield (so-called "non-strategic" in the obfuscation jargon popular with disarmers) nuclear warheads "blur the boundary between nuclear and conventional war ... as an 'asymmetric response' to US superiority in conventional weapons [e.g., Russian 0.3 kt nuclear weapons will be used when they run short of conventional weapons in the ongoing Ukrainian war, as the West replenishes Ukrainian conventional weapons to enable it to destroy Russian conventional arms]. According to Sergei Rogachev, Deputy Director of the Arzamas-16 nuclear weapons design laboratory: 'Russia views the tactical use of nuclear weapons as a viable alternative to advanced conventional weapons'." Note that these tactical Russian nuclear weapons originated, like the American neutron bomb, from early efforts to produce peaceful nuclear explosives for purposes such as space travel (e.g. American "Project Orion", led by Theodore Taylor and Freeman Dyson, employing Lawrence Livermore's relatively clean, i.e. low fission yield and high fusion yield nuclear warhead designs Dove and Starling, which had little fallout but a huge 14.1 MeV neutron output, motivating Sam Cohen to propose using them for





[https://www.cia.gov/readingroom/docs/DOC\\_0001260463.pdf](https://www.cia.gov/readingroom/docs/DOC_0001260463.pdf)

~~Secret~~



## Intelligence Memorandum

Office of Transnational Issues

30 August 2000

### Evidence of Russian Development of New Subkiloton Nuclear Warheads

(b) (1)  
(b) (3)

CIA OTI IN 2000-011 X

public statements by Russian scientists and officials since 1993 indicate that the last nuclear warhead designed during the Soviet era was a device tailored for enhanced output of high-energy X-rays with a total yield of only 300 tons.

Judging from Russian writings since 1995 and Moscow's evolving nuclear doctrine, new roles are emerging for very-low-yield nuclear weapons—including weapons with tailored radiation output—and there are powerful advocates for development of such weapons in the country's military and weapons community. The Moscow press claimed that a draft presidential edict from Yel'tsin called for "development of new-generation nuclear weapons."

APPROVED FOR RELEASE  
DATE: OCT 2005

- Recent statements on Russia's evolving nuclear weapons doctrine lower the threshold for first use of nuclear weapons and blur the boundary between nuclear and conventional warfare. Very-low-yield nuclear weapons reportedly could be used to head off a major conflict and avoid a full-scale nuclear war.

In the post-Soviet era, the need for subkiloton nuclear weapons with minimal long-term contamination has been argued in the media by senior Ministry of Atomic Energy (Minatom) officials, nuclear weapons scientists, and military academics since the mid-1990s. Advocates often claim to know that the United States is developing the next generation of nuclear weapons and argue that Russia must not lag behind. Somewhat inconsistently, they also cite clean, very-low-yield weapons as an "asymmetric response" to US superiority in conventional weapons. According to Sergei Rogachev, Deputy Director of the Arzamas-16 nuclear weapons design laboratory: "Russia views the tactical use of nuclear weapons as a viable alternative to advanced conventional weapons."

- Senior Russian military officers have advocated the use of highly-accurate, super-low-yield nuclear weapons in Russian military journals such as *Military Thought* and *Armeyskiy Sbornik*. Deputy Commander in Chief of the Strategic Rocket Forces Muravyev stated that to have an effective impact across the entire spectrum of targets, strategic missile systems should be capable of conducting surgical strikes in a wide spectrum of ranges with minimal ecological consequences, which could be achieved with low-yield nuclear weapons.

#### Soviet Era Development of Tailored - Output Nuclear Devices

Russian development of nuclear devices tailored to enhance certain types of radiation

TIER  
10/6

- Former Atomic Energy Minister Mikhaylov, and national security commentators have desecrated boundaries between conventional and nuclear advocated developing a new generation of nuclear yields that would change the perception of nuclear destruction. In 1999, he claimed that these new yields sharply lower the psychological threshold of the likelihood of a nuclear strike in a local conflict. Russian military newspaper.
- The development of low-yield warheads that systems would be consistent with Russia's interest in deter conventional as well as nuclear attack. perceptions of a heightened threat from NATO Russian conventional forces. Russia has no military capabilities in the foreseeable future, procurement and deployment of advanced weapons at the nonnuclear level.

The possible diverse applications for subkiloton tactical battlefield weapons to antisatellite weapons current modernization plans will affect Russia's weapons. According to the December 1999 issue

"For an effective impact across the entire spectrum should be capable of conducting 'surgical' strikes in the shortest period of time with minimal ecological consequences using highly accurate, super-low-yield nuclear weapons and requires the highest accuracy."

The range of applications will ultimately be determined by doctrine, and could include artillery, air-to-air weapons, or multiple rocket launchers against

**NOTE: the last Russian nuclear warhead exploded in Ukraine was on 16 September 1991. The same 0.3 kiloton (300 tons) warhead was used in a new Russian battlefield tactical nuclear weapon. Because of the atmospheric nuclear time, it was set off 900m below the Ukrainian coal mine at Yunkom. "safety precaution" allegedly to avoid a nuclear war. This mine "resumed normal operations" after the explosion.**

#### Russia's Evolving Nuclear Doctrine

Since the dissolution of the USSR in 1991, Moscow has undergone a major shift with respect to the possible use of nuclear weapons. Russia's conventional military capabilities led to a renewed emphasis on nuclear deterrence as early as the fall of 1992.

output began during the Soviet period when "clean" nuclear devices—that is with reduced contamination from fission products—were needed for peaceful nuclear military deterrent purposes in 1966, 1970 and 1979 enhanced neutron output devices, and in this peaceful project "coincidentally" tested a similar 0.3 kt tactical explosion (PNE 99) according to the statements by the developers. Clean PNE devices were in effect the first enhanced radiation devices produced in Russia and likely precursors of tailored-output devices developed later for both effects testing and weapons development, which involved the same science without violating the 1963 Atmospheric Nuclear Test Ban Treaty).

William J. Broad wrote in his *Enhanced Radiation Weapons* designed to increase the effective range of gamma, neutron, X-ray, or electromagnetic pulse effects beyond the range of the airblast and fireball effects. Clean PNE devices are designed to minimize contamination from fission products by maximizing the fraction of the total yield produced by fission. The same objectives are achieved by similar design approaches.

There Are Regrets (contrary to disarmament scammers). At the end of the Cold War, the third largest nuclear power on earth was not Britain, France or China, but the Soviet Union. The total yield produced by fission that eliminated in December 1991 resulted in the newly independent Ukraine inheriting roughly 5,000 nuclear arms that Moscow had stationed on its soil. Along with the nuclear civil defense underground shelters which have allowed the civilians to survive the invasion and fight back, which were fortunately not also destroyed on the say-so of the anti-civil defence journals *Scientific American* and *Bulletin of the Atomic Scientists*.] The removal of this arsenal often gets hailed as a triumph of arms control. Diplomats and peace activists cast Ukraine as a model citizen in a world of would-be nuclear powers. But ... both Ukrainian and American experts questioned the wisdom of atomic disarmament. The deadly weapons, some argued, were the only reliable means of deterring Russian aggression. ... "We gave away the capability for nothing," said Andriy Zahorodniuk, a former defense minister of Ukraine. Referring to the security assurances Ukraine won in exchange for its nuclear arms, he added: "Now, every time somebody offers us to sign a strip of paper, the response is, 'Thank you very much. We already had one of those some time ago.'" [Idealists will never be able to understand that trash lies written on paper as treaties or agreements are as worthless as trash speeches and acted handshakes in front of TV cameras. Hitler signed endless such treaty lies and also similarly gave endless lying peace speeches and peace handshakes before his invasions and genocide, as did Stalin and all the other dictators. The media of the 1930s lapped it up then as peacemaking, as it always does.]"

deter any large-scale conventional aggression in Russia

This concept in turn necessitated a rethinking of by President Yel'tsin—that Moscow would never November 1993 statement of *Basic Provisions of Federation* clearly departed from the decade-old weapons and adopted a broadened concept of nuclear threats to Russia. As a warning to p might use nuclear weapons first if an aggressor operation of Russia's strategic nuclear forces, in and chemical industries.



# Veterans of Kyiv rue the day they gave nuclear arsenal *The Times*



From Anthony Loyd, Kyiv, "Veterans of Kyiv rue the day they gave up their nuclear arsenal", *Friday February 11 2022, 3.00pm, The Times*: "The general who had his finger on the button warns: Don't give up your missiles. ... tritium boosters and fragments of SS-24 "Scalpel" rocket launch systems on tabletops, all that is left of Ukraine's nuclear missile stockpile, once the third largest in the world, as workmen began to box them, taking them away into storage in preparation to close the office for good. 'I knew deep in my soul that we should never have given them away' ..." - <https://www.thetimes.co.uk/article/step-into-the-twilight-world-of-ukraines-forgotten-nuclear-silos-ljt9g3dh8> (Only one nuclear SS18 ICBM base now remains in Ukraine, 25km north of

Pervomaysk, but it is now just a tourist museum, since all of the nuclear warheads have been removed from the remaining four SS-18 ICBMs on display.)



### Part 3. The birth of a new - peaceful - direction in nuclear charging

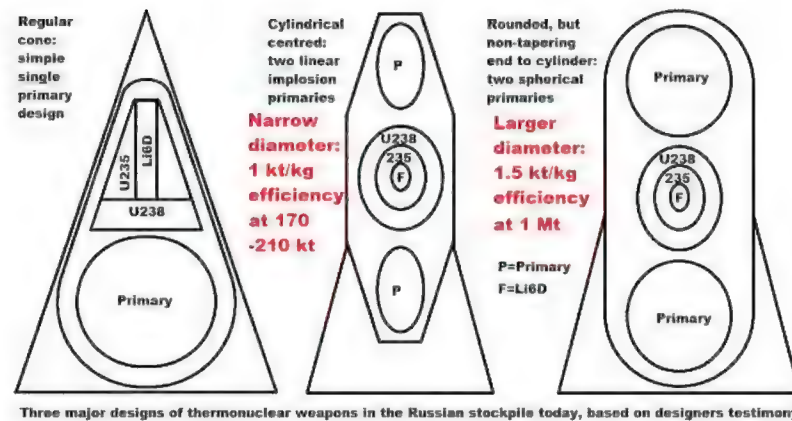
"Liquidation of an emergency gas fountain by a nuclear explosion birthplace" (Batorin V. D., Mokshenkov M. M., Fokeev S. M. No. 2, VNIIEF).

The first JAVA RFNC - VNIITF worked on Pamuk ...

Minister of Medium Mechanical Engineering, E. P. Slavsky, cc development of a small-caliber JAVA RFNC - VNIITF, where batteries for artillery shells were developed.

The development of a small-caliber java was carried out in the department specially organized for the development of designs of a nuclear charge. However, the schematic design solutions of the primary nuclear charge for this JAVA were used the same as for the artillery nuclear charge developed in department 066. ...

The charge developed in the department of P.A. Esin, inter small-caliber JAVA, was successfully tested at the Semip on July 15, 1967. And after the complete completion of the de Java design as a whole, a nuclear explosion was carried out which ensured the clamping of an emergency gas well at the Pa



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Soviet Atomic Project / Head of the Editorial Board

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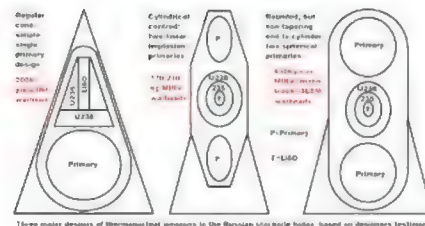
Creators of nuclear weapons KB-11 (RFNC - VNIIEF) Volume 1. Authors-compilers V. T. Solgalov, E. A. Astafyeva, O. A. Pogodina. Edited by Academician of the Russian Academy of Sciences R. I. Ilkaev. RFNC - VNIIEF. Sarov, 2004



Cleaner nuclear weapons with dual primaries around central D+T gas capsule in tube

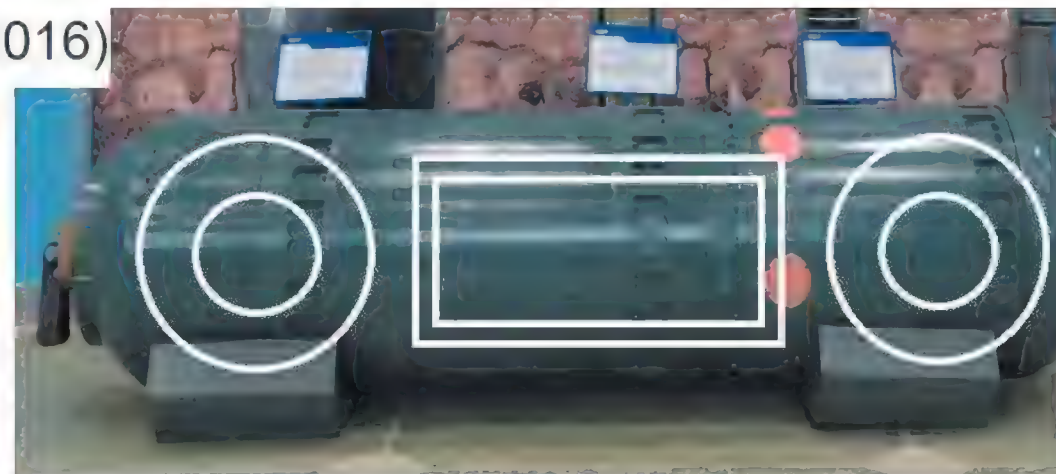
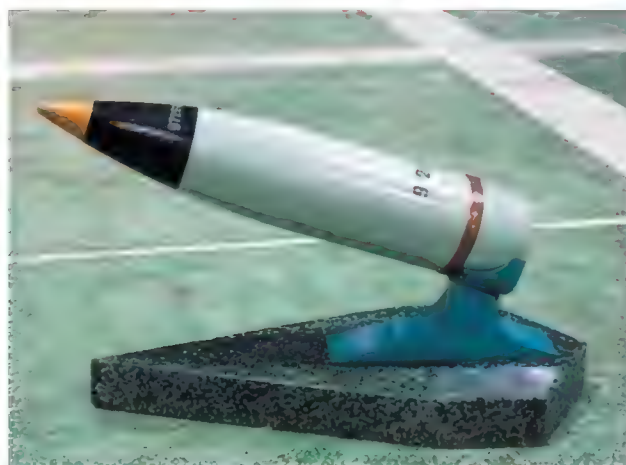
Designed for military uses, also used for peaceful tests





## Word about Zababakhin (2016)

<http://vniitf.ru/data/files/books/slovoozababakhine.pdf>



Самое чистое ядерно-взрывное устройство

для мирных применен

**(The cleanest nuclear explosive device for peaceful applicatio**

Самый малогабаритный  
ядерный артиллерийский снаряд

**(The smallest nuclear artillery projectile)**

ABOVE: declassified Russian photo of the the 99.85% clean (fusion) Russian nuclear warhead (referred to the secret CIA report above), originally developed by E. I. Zababakhin at Russia's VNIITF (the Russian Federal Nuclear Center, *All-Russian Research Institute of Technical Physics*) nuclear weapons lab for "peaceful" uses, but more recently weaponised and put into the unregulated Russian tactical (aka "non-strategic") nuclear warhead stockpile, for use in coercing and overcoming Western defences which now lack purpose designed tactical nuclear weapons W54 and W79. This photo is directly taken from VNIITF's own book *A WORD ABOUT ZABABAKHIN - COLLECTION OF MEMORY* (second edition, corrected and enlarged book by vniitf, published in the closed city Snezhinsk in 2016, with an Editorial foreword stating: "... the editors considered it possible to update the biographical information of the memoirists and include previously unpublished materials, such as those declassified

..."), online on their website in PDF form (along with other useful books, containing previously classified data and photos of Russian nuclear warhead designs and tests). This book states on pages 6-7 that the Russian cleaner tactical nuclear weapons were first tested in 1965 when tritium and deuterium in gaseous form replaced solid lithium deuterium, in an experiment to reduce the yield of cleaner weapons to the minimum:

*"In terms of volume and breadth of coverage, the program of physical experiments VNIITF has no analogue among all the world's nuclear weapons centers. Of particular importance was a physical experiment conducted in 1965, in which thermonuclear combustion of gaseous deuterium and gaseous deuterium-tritium mixture was carried out. This experience marked the beginning of the development of a new type of atomic charges, the use of which in thermonuclear munitions made it possible to significantly reduce their dimensions and mass, which was very important for the creation of multiple warheads of missile systems, both ground-based and underwater-based. Its results were also in demand in the creation of nuclear explosive devices (NED) for peaceful applications. Peaceful Use of Nuclear Explosions Eugene Ivanovich paid special attention. Under his leadership, VNIITF became a leader in development and use of devices for peaceful nuclear explosions: from the conducted in the USSR 124 peaceful nuclear explosions in 75 development devices were used VNIITF. ... The experience of 1965, in the development and implementation of which Evgeny Ivanovich took personal active participation, was useful for both types of NED. ... Works performed by VNIITF under the scientific supervision of E. I. Zababakhin were marked by high government awards: received 10 Lenin and 20 State Prizes, 4 employees of VNIITF became Heroes of Socialist Labor, many employees received orders and medals of the USSR." Page 15 adds: "In recent years, the VNIIP team under the leadership of E. I. Zababakhin has been actively involved in search of ways to reduce fragmentation [fission fragment residual radioactivity] activity in special atomic and thermonuclear charges of high purity, intended for overburden work. To extinguish a flowing gas well under the guidance and directly with the participation of E. I. Zababakhin, a special small-caliber atomic charge was created."*

ABOVE: first Russian MIRV for SLBM was 170 kt yield, 170 kg mass warhead (1974); the first Russian MIRV for ICBM use was a 210 kt yield, 210 kg mass warhead (1978). Both of these signify the 1 kt/kg limit achievable for the small-diameter MIRV warheads (2 MIRV's in the SLBM missile, 3 warheads in the bigger ICBM), using the dual linear-implosion Russian thermonuclear design. However, Russia had earlier put 1 megaton 650 kg, i.e. 1.5 kt/kg "monoblock" (single warhead) on SLBM's in 1974. The design here was more efficient, since it used two spherical primary stages (one on each side of the central thermonuclear charge), rather than two linear-implosion primary charges around the thermonuclear charge which had to be used in the later, smaller-diameter MIRV warheads. All of these weapons employing two primary stages were less "efficient" than the single-primary two-stage Western designs, but they had advantages to Russia in terms of the reduced cost and complexity. (In WWII, cheap Russian tanks overrun more costly German Panzer tanks, because of their sheer numerical superiority: Russia could afford to employ several of their cheaper tanks to destroy one Panzer. Having two primaries means you can use simpler, cheaper primary stages, that don't require boost gas, etc. Russian warheads are mass-produced, unlike hand crafted Western devices. It is the Ford Model-T versus the Rolls Royce Silver Ghost. Which made the most impact?)







**Warhead for the first multiple reentry vehicle of a sea-launched ballistic missile. As part of the product thermonuclear charge and devices of the automation system, which have minimal dimensions, are used by developers, the project was called "One Hundred per Hundred" (to accommodate 100 kilotons of power charge). The dense layout of the components of the warhead made it possible to create a light and small warhead that meets the requirements for placing three warheads on one launch vehicle. The mass of the warhead is 210 kg. The 1 kt/kg objective suggests it has a yield of 170 kt if design yield was achieved. The product was put into service in 1978. Again, the 1 kt/kg objective suggests it has a yield of 170 kt if design yield was achieved. The product was put into**



**The first warhead of a multiple reentry vehicle aiming at aiming points, weight 210 kg. The product was put into service in 1978. Again, the 1 kt/kg objective suggests it has a yield of 170 kt if design yield was achieved. The product was put into**





**SLBM non-MIRV, weight 650 kg, 1 Mt. Put ir**

**These examples suggest that dual linear imploded primary devices gave 1 kt/kg; dual spherical primari**













В. Д. Кирюшкин

**РФЯЦ-ВНИИТФ  
в становлении  
атомной артиллерии  
или История  
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# Books



## RFNC - VNIITF in the development of the atomic USSR

A witness and participant in the events tells about people, their deeds and problems associated with equipment for artillery ammunition for artillery and mortar systems and not only. The book is addressed to readers interested in the history of the Soviet atomic project and the RFNC - VNIITF.

2011

ISBN 978-5-902278-57-3  
UDC 623.418(09)



LBC 31.4(2R36)

K43

VIEW EXCERPT

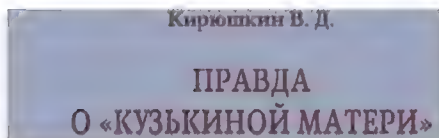
REQUEST A BOOK

ABOVE: this book, RFNC-VNIITF in the Development of the atomic artillery of the USSR, is available online in full here:

[http://elib.biblioatom.ru/text/kiryushkin\\_rfyats-vniitf-atomnoy-artillerii\\_2011/go,0/](http://elib.biblioatom.ru/text/kiryushkin_rfyats-vniitf-atomnoy-artillerii_2011/go,0/). Published in 2011, it confirms the secret CIA report from 2000 which gave evidence that Russian work in the 1960s on cleaner peaceful low-yield (subkiloton) small-diameter dual linear-implosion devices compressing levitated pushers with gaseous thermonuclear fuel (tritium and deuterium) was combined with tactical nuclear weapons for military use by the RFNC-VNIITF based in Snezhinsk, Russia. Such devices may well be more efficient as neutron bombs than the USA's single-primary W79 enhanced neutron weapon, which was 0.8 kt fission and only 0.3 kt fusion (if the removable D+T capsule was inserted; if not it was just a pure fission 0.8 kt linear implosion shell). Please also see this book on the assembly of the 50 megaton RDS-202 test design, again in Russian, giving further details of the general approach to nuclear warhead design by Russia, showing on page 38, chapter 4 section 4.1, "Assembly of the main module", that Tsar Bomba 50 megaton bomb's fusion charge was a hollow sphere (of Li6D) with section 4.2 indicating that it had a composite core (e.g. U235 and Pu239) fissile sparkplug (illustrated below): [http://elib.biblioatom.ru/text/kiryushkin\\_kuzkina-mat\\_2015/go,0/?bookhl=](http://elib.biblioatom.ru/text/kiryushkin_kuzkina-mat_2015/go,0/?bookhl=)





**2015 book:****Translated from the Russian (book about)**

The product "202" is fully prepared for

## Chapter 4

The product "202" is prepared for full-scale tests!

**(Fusion charge is hollow sphere)**

## 4.1. Assembly of the main module

The assembly of the module was carried out exactly on schedule (09.08.56). I remember well that the next day after the assembly, where I participated in the work of the acceptance commission, a technical meeting was held [12] at the main coordinator of the Research Institute-1011 to discuss the results of theoretical design and experimental work on the product RDS-202, which I was invited too.

The module was assembled under normal conditions, with uncontrolled humidity in the assembly shop. The moisture-proof coating applied to parts made of lightweight material, developed according to our technical task in the laboratory of special production (based in production buildings 33 and 26), which was led by V. N. Purusov, allowed to remove the requirements for air humidity in the assembly room. This coating has found further application and development in the nuclear dawn-completion, removing the requirements for the humidity of the assembly rooms in the mass production of this type of units.

To represent the scale of the module assembly, here is a small picture.

During the assembly of the module, before checking the gaps in the joints of the faces of the five- and six-sided elements that formed a spherical layer after laying in the lower hemisphere of the housing (as in a bowl), sending them into place to seal and align the gaps in the joints of the faces (with the aim of further filling the gaps with gaskets) was carried out by an employee of the Istomin plant\* not with his hands, and with his feet (!), in slippers, "dancing" on the "naughty" part inside the bowl - the housing of the module. Of course, such an action was not provided for in the instructions for assembling the module, but the scope of work allowed it (even required it: instead of using the efforts of the hands, use the strength of the legs), and with the permission of all members of the commission, he - a young member of the commission and an official representative of the OTC, an athlete-athlete - found a way out of the difficult situation.

## 4.2. Critical mass measurements of the main node of the primary module

Before assembling the primary module, control critical mass measurements

they are made of a special material of a new composition for the product "202". Therefore, our experimental group, consisting of B. A. Predein, together with V. Yu. Gavrilov, carried out the physical characteristics of the node and the assembly of the product out a set of control physical measurements. This was done on the equipment of KB-11 in the laboratory of B. A. Predein during the warm-up nights of 1956. We started at an official working day ended, and all the lab workers were busy with their personal affairs. And we finished the work the next day. In the process of taking measurements, it was necessary to repeat. It also took time to adapt to the conditions of the laboratory and to capture the features of the material.

## 4.3. Acceptance of the MVK product

Acceptance of the product "202" was carried out according to the following order of the Minister [13].

"1. To check the 202 product manufactured in accordance with the drawings and specifications approved by the chief of the Institute-1011, and to accept this product, create a commission consisting of:

Iskra A.D. - Chairman of the commission, Shchelkin

K. I. - member of the commission, Negin

E. A. - member of the commission,

Grechishnikov V. F. - member of the commission,

Pokrovsky N. V. - member of the commission,

Vasyukov A.M. - member of the Commission,

Shvilkin N. G. - member of the commission.

2. Finished, assembled and accepted by the chief of KB-11 and special acceptance No. 206 product together with a set of equipment equipment, a set of documentation for the product and equipment equipment and technical documentation approved by the chief of the Institute-1011, are presented to the commission consisting of KB-11 T. Muzrukov B. G.

3. The Act Commission on the acceptance of the product "202" is presented to me for a conclusion on its suitability for testing to submit to me for approval.

were carried out. By this time, the main node for the primary module was also received from Plant No. 817 . The details of this node were fulfilled-

• Unfortunately, I don't remember his name and patronymic

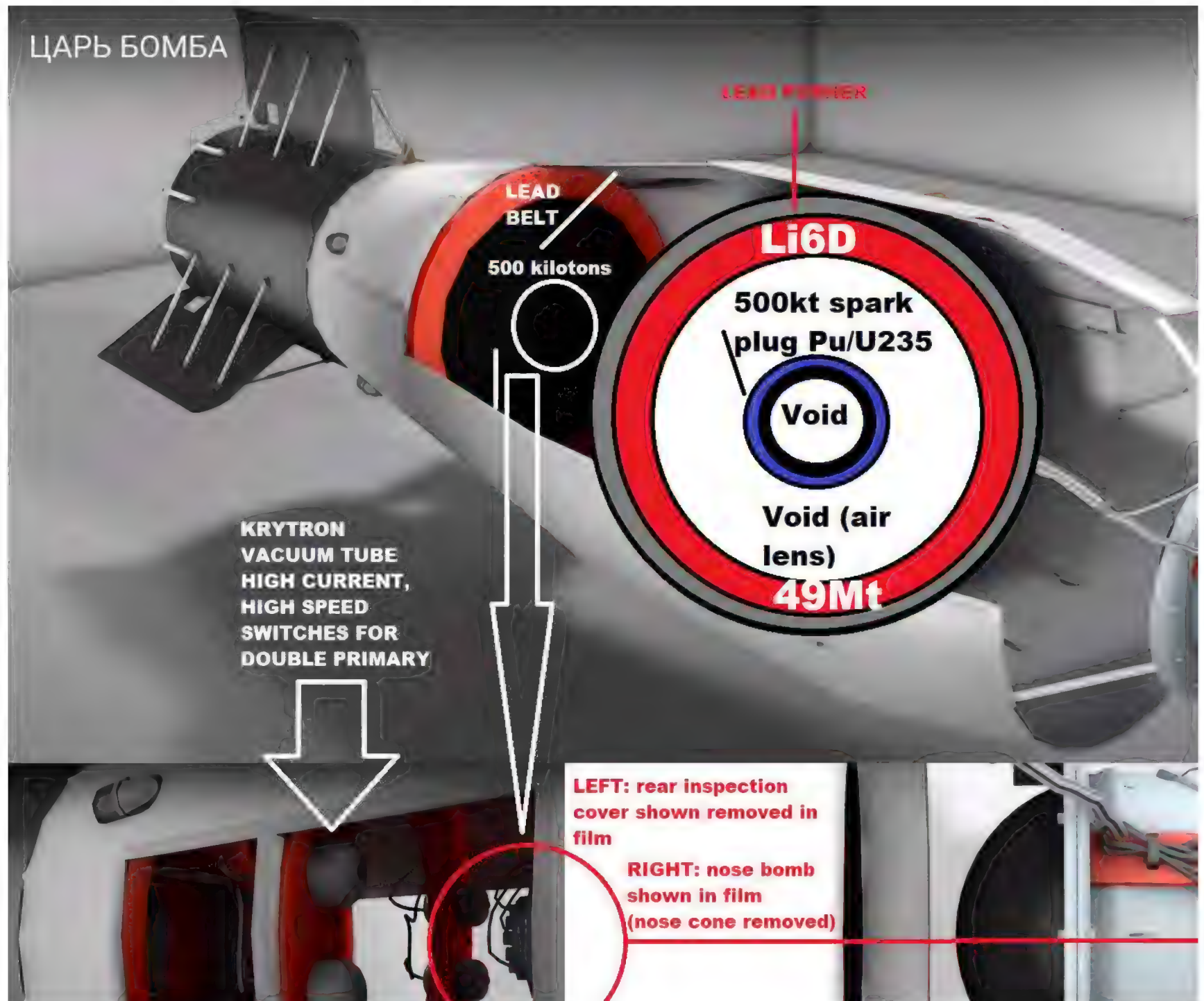
**Primary = main (fusion) central charge**

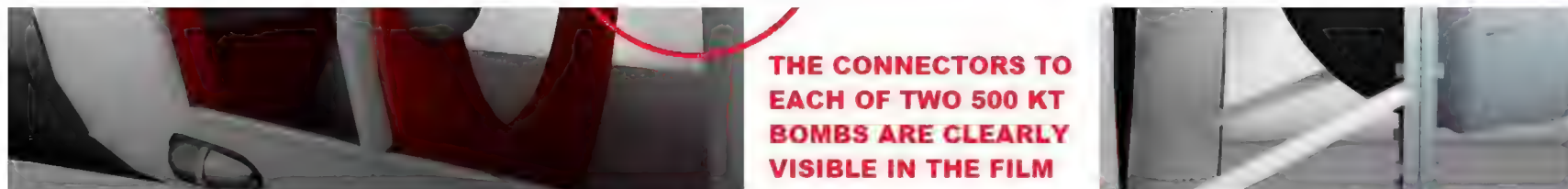
The acceptance of the product "202" was carried out by specialists from KB-11, the Main Department of MS and was headed by a representative of the military a











ABOVE: latest declassified information on design of the 1961, 50 megaton RDS-202 Tsar Bomba shows it contained a central hollow sphere made up of lego like pentagons of lithium deuteride which has to be assembled by a worker stamping on them in slippers (inside each huge hemisphere), and contained a central 500 kt hollow composite core spark-plug (to fission the lithium in the compressed Li6D to give tritium for fusion). This better accounts for the actual weight of the device than a solid central sphere, and also explains the 2-3% fission yield better. Two "pear-shaped" 1.6 Mt 1955 two-stage RDS37's were scaled down to 500 kt each, to act as initiators of the main charge in 50 Mt RDS202, irradiating its pusher from both sides. (The discussion of evidence declassified of this design later in this post will, for simplicity, omit the details of the hollow central spherical fusion charge and its fissile core.)

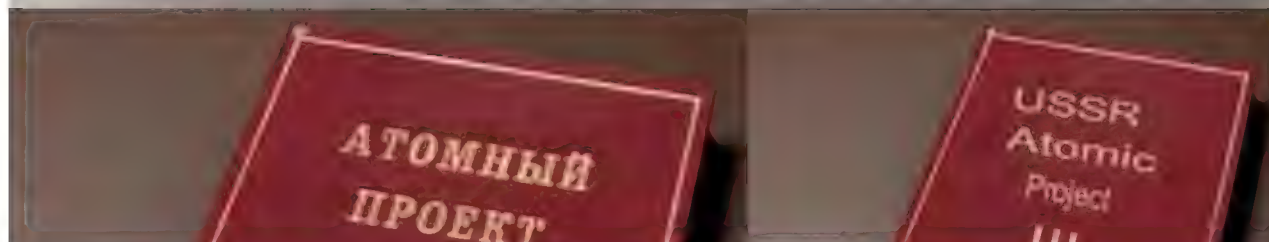
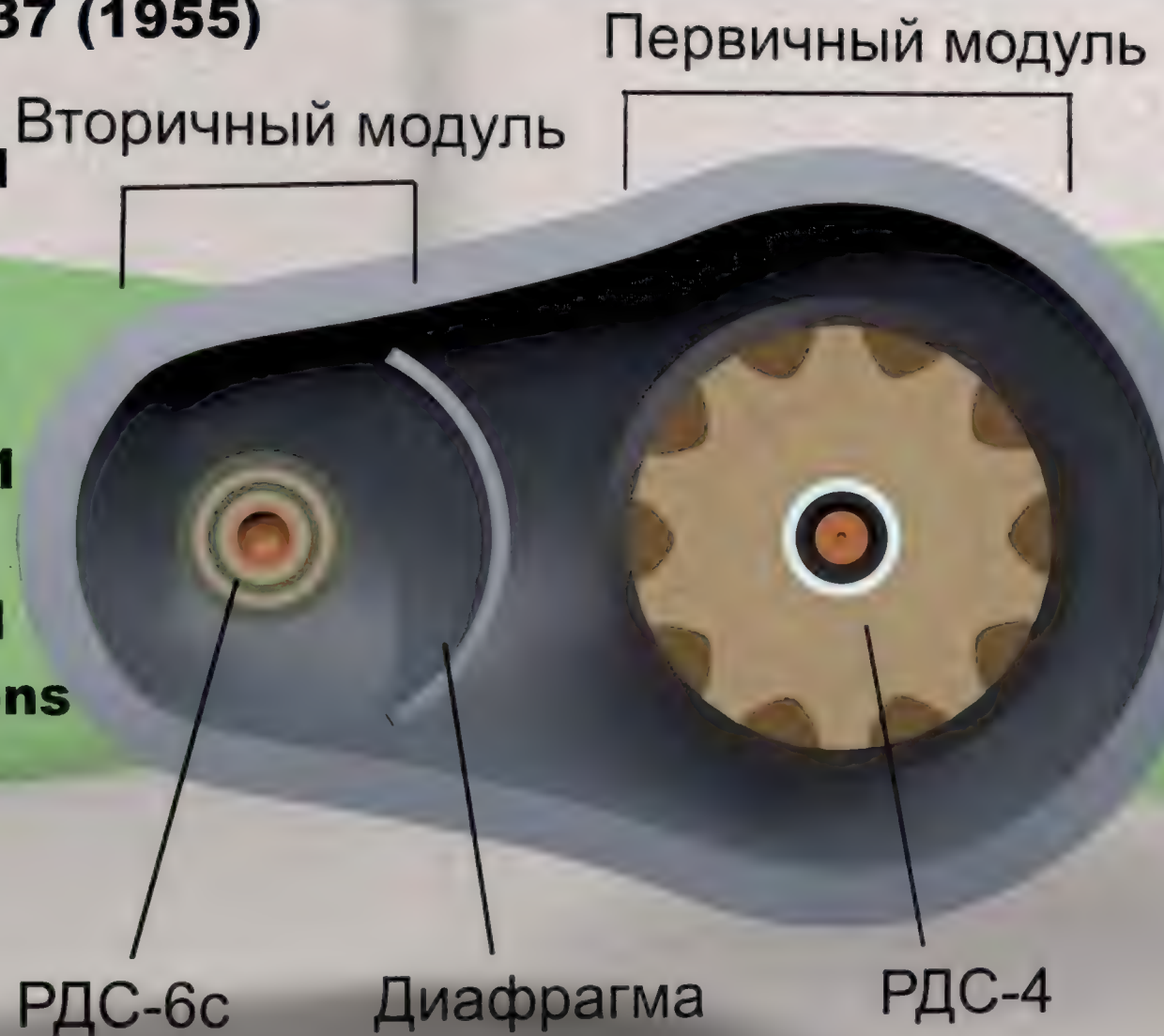




# 1.6 Mt RDS-37 (1955)

was  
pear-shaped

The 500 kt  
bombs  
used in 1961  
RDS-202  
were scaled  
down versions



Предложение по испытанию  
для проверки принци

Основной задачей I-го полугодия, согла



опытного устройства для проверки принципа.  
В настоящее время конструкция устройства  
ведены основные расчеты работы устройства.  
Предлагаемое устройство состоит из с.  
1. Первичное изделие типа РДС-4 (...).  
2. Основное изделие, состоящее из с.  
3. Грушевидный кожух, (...), в который  
изделия.

Ожидаемая мощность взрыва около 1

**Point 3 on test proposed  
1955 states that RDS-  
shaped" and had a pre  
megaton +/- 40% unce**

ABOVE: the original 6 June 1956 report on the design for a 25 ton air drop test, RDS202, had a predicted yield of about 38 megatons and was a derivative from the two-stage RDS-37 test of 1955. It was postponed (not cancelled) by a request on 16 May 1957, owing to successful tests of products 245 and 205, and the final test of the approximately 25 ton bomb in 1961 employed an improved double-approach system suggested by Trutnev and others which was capable of increasing the yield by a factor of about 2.5 from the RDS-37 single-approach principle (first tested in 1958), due to its better x-ray coupling efficiency for main fusion charge compression. However, the 1961 test was only 50 Mt not 100 Mt, because it switched the U238 pusher to lead to reduce the fallout and the blast effect.





№ 208

Отчет НИИ-1011 по обоснованию конструкции  
и расчетам изделия РДС-202

**6 June 1956 report on the use of the  
tested RDS-37 two-stage thermonuclear  
design to develop a 25 ton, 38 megaton bomb:**

6 июня 1956 г.<sup>1</sup>  
Сов. секретно  
(Особой важности)  
Экз. № 1

**RDS-202.  
Note that this  
design was  
changed when  
tested with 50 Mt in 1961**

*Основные расчетные данные РДС-202*

Зам. гл. конструктора Забабахин Е.И.  
Начальник 1 сектора Романов Ю.А.

**Введение**

В настоящем отчете изложено обоснование конструкции РДС-202 и основные расчетные данные этого изделия.

В результате успешного завершения работ КБ-11 по РДС-37 и его испытания был окончательно проверен новый принцип конструирования изделий, позволяющий создавать изделия очень большой мощности с высоким КПД. Результаты всех работ по изделию РДС-37 показали, что на этом принципе могут быть созданы изделия с тротиловым эквивалентом в *десятки и даже сотни миллионов тонн*, а также позволили оценить необходимые для таких изделий количества активных веществ (главным образом  $Li^6D$ ).

Эти выводы и оценки и послужили основанием для [выдачи] задания нашему институту на разработку нового изделия РДС-202, значительно превосходящего по мощности все изделия, испытанные до настоящего времени как в СССР, так и в США.

В задании на проектирование предусмотрена мощность изделия и количество  $Li^6D$ , которое может быть в нем израсходовано, а именно полный тротиловый эквивалент должен составить *20–30 млн т*, общее количество  $Li^6D$  (с (...)% содержанием изотопа  $Li^6$ ) — до (...) *тонн*.

**ENGLISH TRANSLATION:**

№ 208

НИИ-1011 report on the justification of the design and  
calculations of the RDS-202 product

**NOTE: This 6 June 1956 report states that  
they can produce up to about 38 Mt from  
a 25 ton bomb, using RDS-37 principles.  
The later revised design used the 1958 tested**

June 6, 1956 1  
Sov. secret  
(of special importance)  
Ext. No. 1

**SOURCE:**

**Atomic project of the USSR: documents and  
[in 3 volumes] / Ed. ed. L. D. Ryabeva. - 199  
Hydrogen bomb, 1945-1956. Book. 2 / State  
corporation. Energy "Rosatom"; comp.: G.  
(responsible comp.), P. P. Maksimenko. - 2**

В результате согласования требований, вытекающих из к  
и возможностей самолета-носителя, установлены допусти  
всего изделия, а именно:

общий вес — до ~ 25 т,  
диаметр — до (...) м.

По условиям испытания взрыв должен быть произведе  
изделия с самолета. При взрыве столь значительной силы  
собом сохранить самолет-носитель от действия теплового  
применение парашюта для изделия, сильно замедляющее е  
ляющее самолету за это время уйти на большое расстояни

Необходимость применить парашют потребовала расх  
части из имеющихся весов и объемов, которые в противно  
использованы для повышения эффективности основной ч

РДС-202 построено по принципу РДС-37 и отличается  
чительными размерами, связанным с этим заметно лучш  
ядерного горючего и гораздо большей абсолютной мощно  
(...)

Расчетное обследование ряда вариантов конструкции  
веса  $Li^6D$  около (...) кг, и оно показало, что в лучшем из  
риантов мощность заметно превосходит первоначально н  
и достигает по расчету 38 млн т<sup>\*)</sup>. В связи с этим результат  
для РДС-202 может быть значительно уменьшено.

<sup>\*)</sup> Фактическая мощность должна быть несколько выше, т.к. образ  
в действительности делится с большим сечением, чем принято в расчет

481

**(Note: the planned RDS202 test was post  
1957 after successful tests of products 24  
the basic concept of RDS202, being a very  
around 25 tons was resurrected later.)**

As a result of the coordination of the requirements arising from the  
product and the capabilities of the carrier aircraft, the permissible weight and s  
product are established, namely:

## Trutnev "double approach" system, about 2.5 times more efficient.

Basic calculation data of RDS-202

Deputy Chief Designer Zababakhin E.I.

Head of Sector 1 Romanov Yu.A.

Introduction

This report outlines the rationale for the design of the RDS-202 and the basic design data of this product.

As a result of the successful completion of the work of KB-11 on RDS-37 and its testing, a new principle of product design was finally tested, which makes it possible to create products of very high power with high efficiency. The results of all work on the RDS-37 product showed that products with a TNT equivalent of tens or even hundreds of millions of tons can be created on this principle, and also allowed us to estimate the amounts of active substances necessary for such products (mainly  $\text{Li}^\circ\text{D}$ ).

These conclusions and assessments served as the basis for [issuing] a task to our institute for the development of a new RDS-202 product, significantly exceeding in power all products tested to date both in the USSR and in the USA.

The design assignment provides for the capacity of the product and the amount of  $\text{Li}^\circ\text{D}$  that can be consumed in it, namely, the total TNT equivalent should be 20-30 million tons, the total amount of  $\text{Li}^\circ\text{D}$  (with (...) % content of the isotope  $\text{Li}^\circ$ ) - up to (...) tons.

total weight - up to ~ 25 t,

diameter - up to (...) m.

According to the test conditions, the explosion must be produced the product is dropped from the aircraft. With an explosion of such a force, the only way to save the carrier aircraft from the effects of thermal radiation is to use a parachute for the product, which greatly slows down and allows the aircraft to go a long distance during this time.

The need to use a parachute required the expenditure of some of the available weights and volumes, which could otherwise be used to increase the efficiency of the main part of the product.

RDS-202 is built on the principle of RDS-37 and differs from it only in significant dimensions, associated with this noticeably better use of nuclear fuel and much greater absolute power.

(...)

A design survey of a number of design variants was carried out for  $\text{Li}^\circ\text{D}$  of about (...) kg, and it showed that in the best of the surveyed variants, the power significantly exceeds the originally intended value reaches 38 million t\* according to the calculation. Due to this result of  $\text{Li}^\circ\text{D}$  for RDS-202 can be significantly reduced.

\*The actual power should be slightly higher, because the  $\text{U}^{237}$  formed during actually divided with a larger cross-section than is accepted in the calculation.





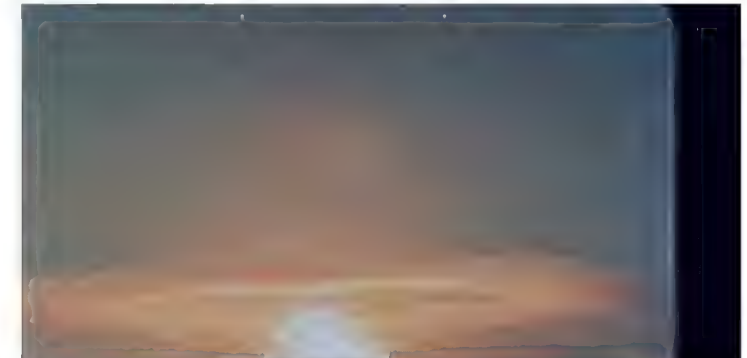


1949 f  
left 19  
left

joe1  
joe17



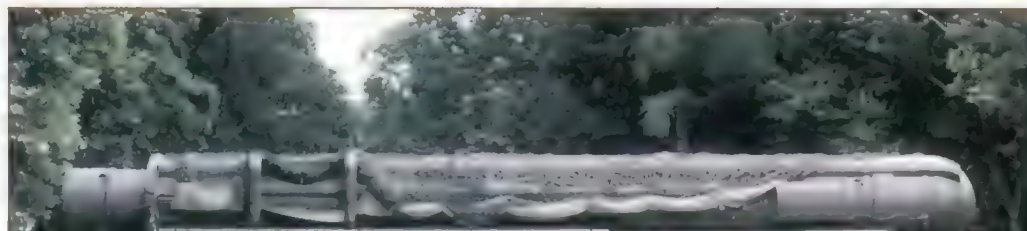
**Soviet nuclear torpedo test at No cloud rising from the surface of t  
underwater nuclear torpedo test.  
took place on 21 September 1955  
Site Novaya Zemlya) of a torpedo  
The location was NZ Area A, Chy  
Russia. The yield was 3.5 kiloton  
positioned at distances ranging fi  
kilometres. Among the ships were  
submarines, minesweepers and s  
sheep, 100 dogs, and other anima  
Only one ship was sunk by the ex  
300 metres from the explosion.**



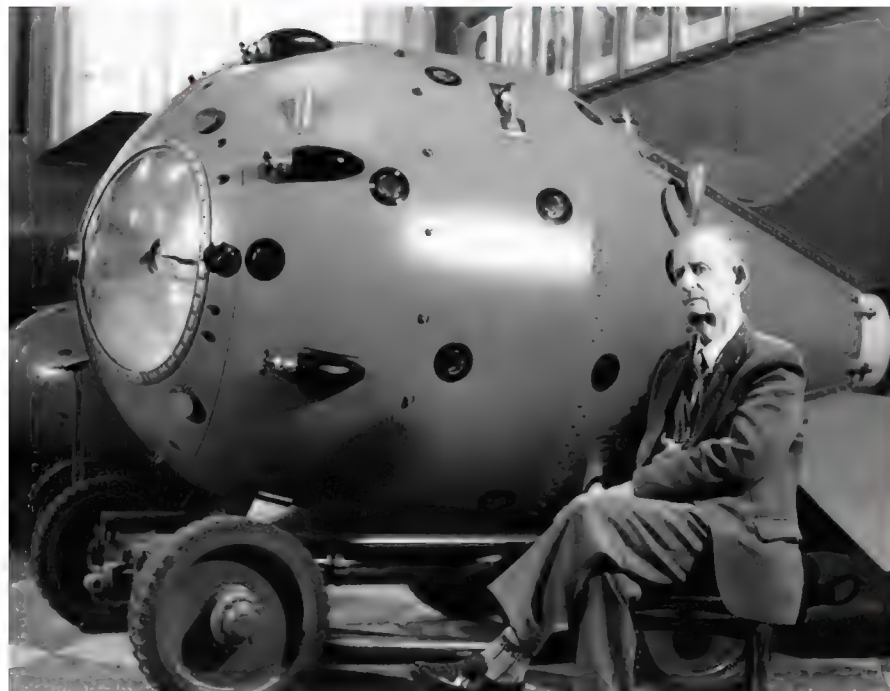


**1953 400kt h bomb**









Academician Yu. B. Khariton in the RFNC-VNIE museum near the body of the RDS-1 bomb. Museum of Nuclear Weapons RFNC-VNIEF, 1993

This was a 22 kt Russian copy of the American Trinity test. Russian 1949 test site before and after photos are shown below













**General view of the 1949 test shortly after the explosion  
from a distance of 5000 meters along the southeast radius.  
(Minatom archive )**

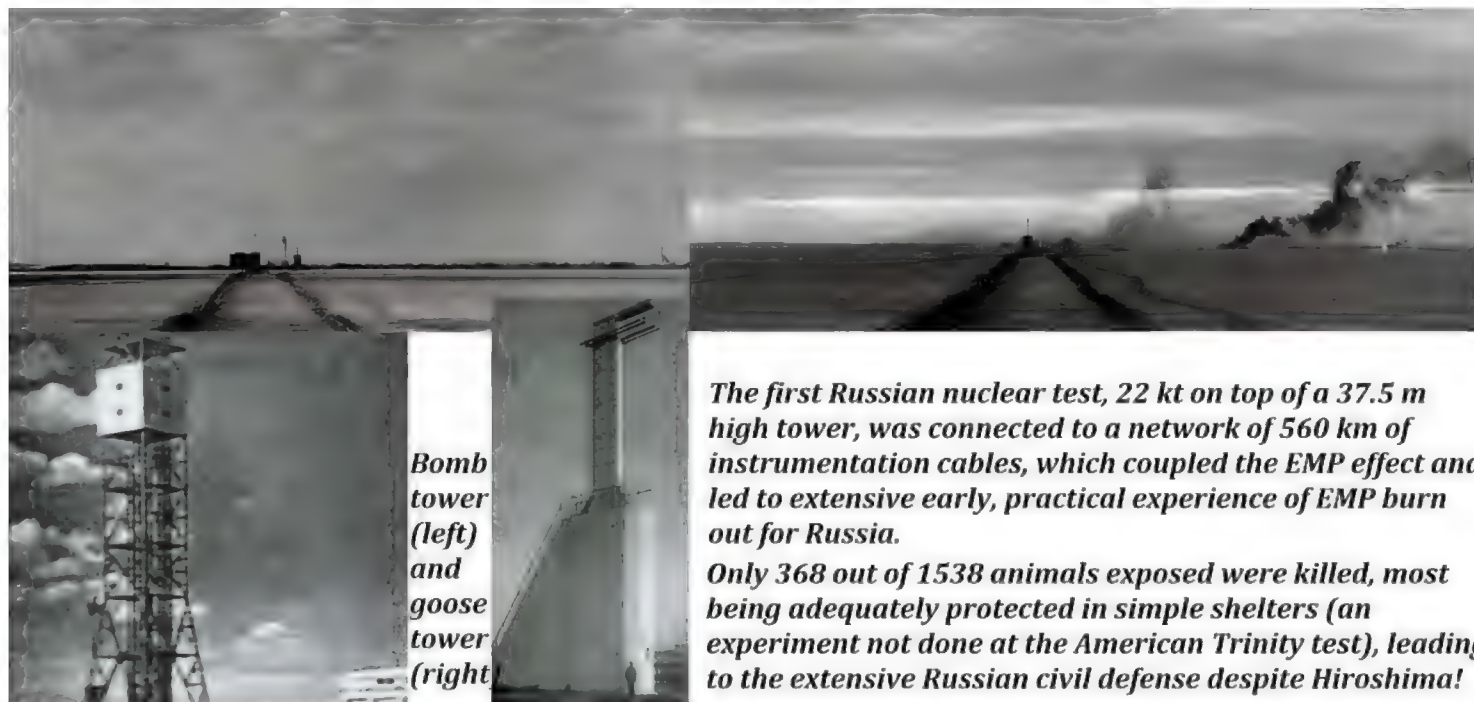




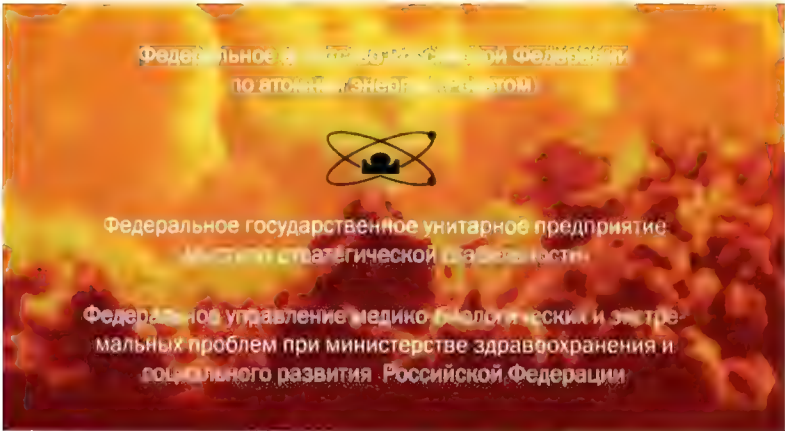








ABOVE: 40 kt RDS4 Russian test, air dropped and detonated 350m above the Totskoye, 14 September 1954, in WW2 hero Marshall Zhukov's exercise of 45,000 Russian troops in tactical nuclear war (copying America's Nevada "Desert Rock" nuclear tests with troops in trenches near GZ). **A whole book has been published about the radiation effects from this test, showing that the gamma radiation was 140 R/hr at 30 minutes, at 200 m from ground zero, decaying to 0.8 R/hr at 24 hours, and that a peak fallout gamma dose rate of 100 mR/hr occurred 1.5 hours after burst 70 km downwind, where the fallout pattern was 23 km wide. (These are useful data to have, since Russia has not yet openly published anything like America's DASA-1251 fallout patterns compendium.)** This is relevant to the whole question of whether Russia really thinks it can use tactical nuclear weapons for military objectives in a limited war: it has actually done the nuclear tests long ago. It is not theoretical!



С. А. Зеленцов (генерал-лейтенант)

ТОЦКОЕ  
ВОЙСКОВОЕ УЧЕНИЕ

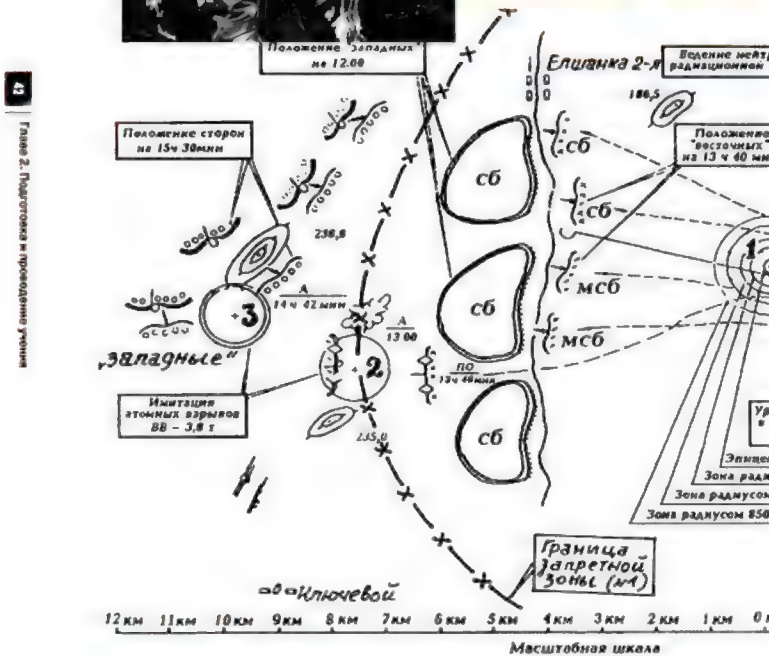
Посвящается 50-летию проведения  
Тоцкого войскового учения  
(сентябрь 1954 г.)  
и вкладу московских ученых  
в ядерные испытания

Под общей редакцией научного руководителя  
РФЯЦ ВНИИЭФ, академика РАН В.Н. Михайлова

МОСКВА  
2006

Сообщение ТАСС:  
«В соответствии с планом научно-исследовательских и экспериментальных работ в последние дни в Советском Союзе было проведено испытание одного из видов атомного оружия, целью испытания было изучение действия атомного взрыва. При испытании получены ценные результаты, которые помогут советским ученым и инженерам успешно решить задачи по защите от атомного нападения».

Газета «Правда», 17 сентября 1954 года.



Положение границы запретной зоны и схема действий войск на проводившемся 14

Условные обозначения:  
CB – стрелковый батальон; MCB – мотострелковый батальон; ПО – передовой отряд; А – 13.00

Neutron induced activity, R/hr		Fallout downwind, mR/hr	
Direction	Activity	Direction	Activity
North	1.2	North	1.2
South	1.2	South	1.2
East	1.2	East	1.2
West	1.2	West	1.2

40 kt RDS4 Russian tactical nuclear troop test at 350m altitude on 14 September 1954 near Totskoye.  
WW2 hero Marshall Zhukov sent 45,000 troops into the fallout area, 140 R/hr at 30 mins at 200 m radius!











By the early 1960s there was a good deal of hard evidence that a considerable amount of shelter space in factories as well as public and apartment buildings had been built, and that the Moscow and Leningrad subways had been equipped with concealed blast doors at the entrances to the station platforms and in connecting crosswalks.<sup>6</sup> An ongoing debate in the U.S. at that time concerning the existence of a Soviet civil defense program was largely resolved when, in 1962, U.S. military attaches and newsmen visited the Permanent Civil Defense Exhibit in Moscow and learned how to identify the telltale external features of Soviet shelters, namely their emergency exits, which are normally located at some distance from the building housing the shelter. Commenting on his visit to this exhibit, *New York Times* correspondent Seymour Topping reported in March 1962:

The above ground extensions of shelters now identifiable have been found to be numerous in Moscow. Travelers have seen them in other Soviet cities too. . . . These installations can be seen in the courtyards at various distances from public buildings.<sup>7</sup>

Similarly, the *Reuters* correspondent wrote that

The exhibit showed that in a construction program after the war an extensive system of shelters in basements of office and apartment buildings was laid out.<sup>8</sup>

At the same exhibit, the correspondents learned to recognize the concealed blast doors in the subways, being shown a Soviet film which revealed how "steel doors would be lifted into place by hydraulic jacks to seal off arched entrances to the platforms."<sup>9</sup> Unfortunately, with the rotation of U.S. Embassy personnel and newsmen, the knowledge of how to recognize Soviet shelters was subsequently lost by Americans stationed in Moscow.

<sup>6</sup>Gouré, *Civil Defense in the Soviet Union* (Berkeley: University of California Press 1962), pp. 79-110.  
<sup>7</sup>Ibid. See also Gouré, Testimony before Subcommittee No. 3 of the Armed Services Committee of the House of Representatives, June 17, 1963.  
<sup>8</sup>*The New York Times*, March 23, 1962. [Emphasis added.]  
<sup>9</sup>*Washington Post*, March 25, 1962. [Emphasis added.]  
<sup>10</sup>*The New York Times*, March 23, 1962.

(i.e., with a compression ratio of 5,680 psi to 7,100 psi).<sup>11</sup> Hasty blast shelters are built primarily of reinforced concrete blocks, 2-3 feet thick, and 4-5 feet long, or concrete plates or panels up to 15 centimeters thick.  
Depending on the purpose, the walls of detached and basement shelters are from 0.5 to 1.2 meters thick, and more in the case of special shelters. The roofs of basement shelters are designed to be able to bear the weight of the collapsed building above, most often being made of either prefabricated reinforced plates or cast reinforced concrete, 12 centimeters to 50 centimeters thick. In shelters 12 or more meters wide, the roof will usually be supported by pillars of reinforced concrete every six meters. In some cases, a layer of sand is placed between two layers of reinforced concrete plates. In the case of detached shelters, the roof plates will be covered by some three feet of earth.  
Considerable attention is paid to the planning and design of hasty blast shelters, making use of various precast reinforced concrete structural components, such as pipes with a diameter of 1.5-2 meters, as well as reinforced concrete blocks 2-3 feet thick and plates or steel plates.<sup>12</sup> Normally, such shelters are built in a trench with a right angle or straight entrance and blast doors, and the concrete structure is then covered with 2-4 feet of earth. As was noted, such shelters are estimated to be able to withstand from 14.2 to 46.8 psi overpressure.  
The wide variety of fallout shelters is designed primarily to provide effective protection against radiation, rather than blast overpressure. Basements in one-story houses or semibasements can be adapted by bricking in the windows and banking earth against the walls, as well as by placing 1-2 feet of earth on the floor above and reinforcing the ceiling with several upright beams. This is said to increase the attenuation coefficient by 300.<sup>13</sup> For dugouts and covered trenches, use can be made of round timber, boards, bricks, sheet metal, fascines, and so on, covered with 2-3 feet of earth. The degree of radiation attenuation will vary (between 10 and 550), depending on whether the shelter has straight or right angle entrances, and whether 1, 2 or 3 feet of earth is used as cover. According to Soviet publications, such a shelter with a

<sup>11</sup>Ostrovskii, *Stranitsy*, p. 4; also, "From Prefabricated Parts," *Voennoye Znanie*, No. 8, August 1972, pp. 24-26, and "Where There Is . . .," *Voennoye Znanie*, No. 1, January 1974, p. 24; *Voennoye Znanie*, No. 5, May 1975, p. 39; Iakubovskii, *Grachdanskaya Oborona*, p. 30.  
<sup>12</sup>Akinov and Il'in, *Grachdanskaya Oborona na Obektakh*, p. 174.

emergency evacuation will be as fast as a bulldozer. The time required for evacuation and of the availability of resources, additional requirements for 14-man work ducts with moving equipment persons will respectively; length required vegetable consumption; approximate occupancy of term occupancy food. For the town of ers and employees with "a long monthly journey thirty different being reported. Possibly and space capacity Lytkarino (p in one distribution demonstrated the



***1949 RDS-1 nuclear test target array layout model***





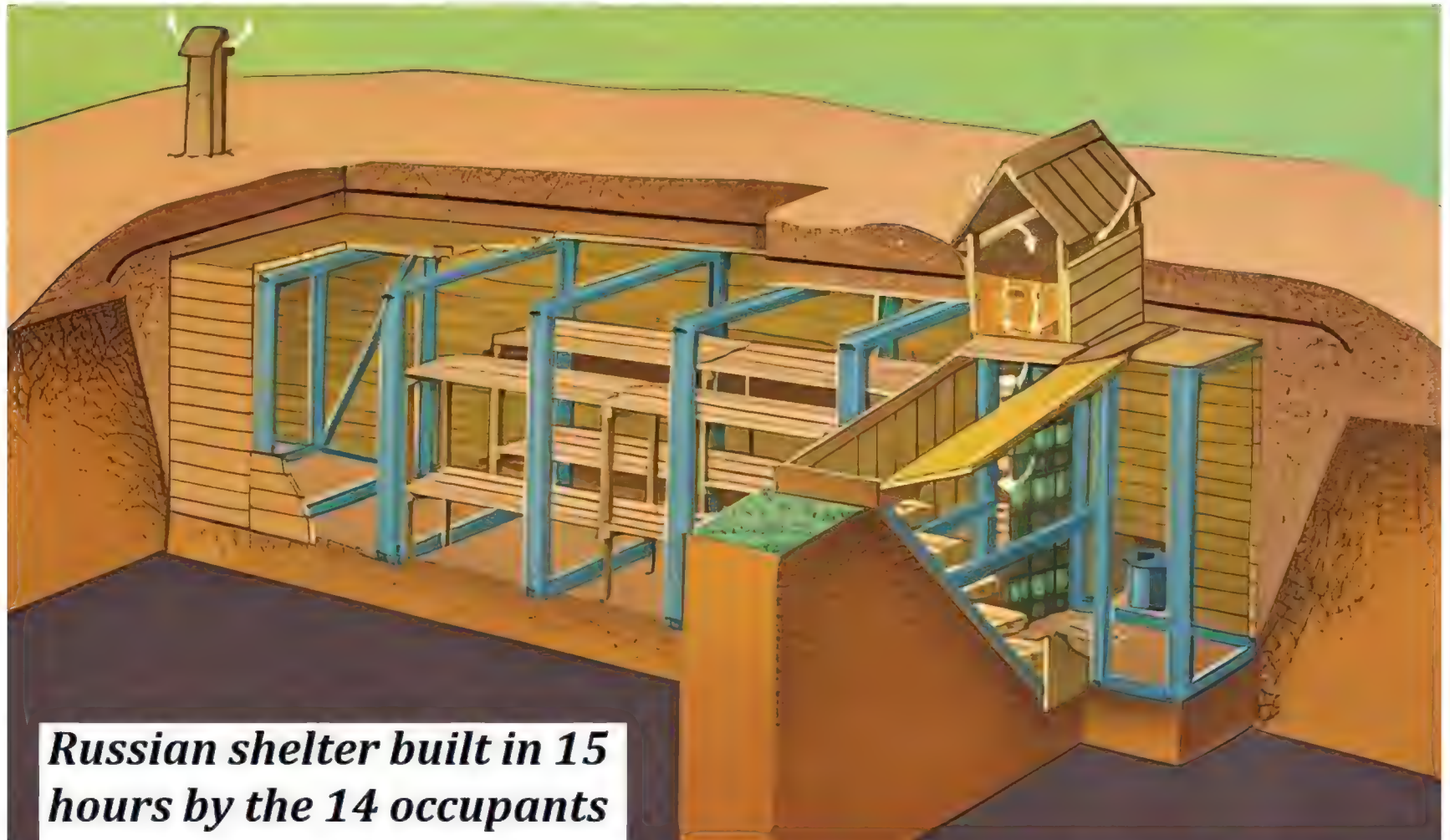


*(Semi-buried nuclear shelter for areas with a high groundwater table)*

В местах с высоким уровнем грунтовых вод противорадиационные укрытия делаются полужаглубленными.

В слабых грунтах проще построить укрытие безрубочной конструкции: между стеной котлована и верхней и нижней распорными рамами устанавливаются стойки, на которые укладываются бревна перекрытия. Верхняя рама подвешивается к ним.

Двадцать человек могут построить для себя такое укрытие за 6—7 часов. Для этого надо иметь 6 м<sup>3</sup> круглого леса, 30 кг тонкой проволоки, ткань для занавеса на входе и несколько досок. Места для укрываемых можно оборудовать из жердей.









## ПРОТИВОРАДИАЦИОННЫЕ УКРЫТИЯ ИЗ ЛЕСОМАТЕРИАЛОВ

ТАКИЕ УКРЫТИЯ МОГУТ ПОЛУЧИТЬ НАИБОЛЬШЕЕ РАСПРОСТРАНЕНИЕ, ТАК КАК ДЛЯ ИХ СТРОИТЕЛЬСТВА ИСПОЛЬЗУЕТСЯ ШИРОКОДОСТУПНЫЙ МАТЕРИАЛ—НЕОБРАБОТАННЫЕ БРЕВНА, ЖЕРДИ, А ТАКЖЕ КОНСТРУКЦИИ СТАРЫХ ДЕРЕВЯННЫХ СТРОЕНИЙ.

ЭТИ СООРУЖЕНИЯ ОСЛАБЛЯЮТ ДЕЙСТВИЕ РАДИАЦИИ В 200—400 РАЗ В ЗАВИСИМОСТИ ОТ ЗАГЛУБЛЕНИЯ И ТОЛЩИНЫ ГРУНТОВОЙ ОБСЫПКИ.



## ANTI-RADIATION SHELTERS MADE OF TIMBER

SUCH SHELTERS CAN BECOME THE MOST WIDESPREAD SINCE WIDELY AVAILABLE MATERIAL IS USED FOR THEIR CONSTRUCTION—UNTREATED LOGS, POLES, AS WELL AS STRUCTURES OF OLD WOODEN BUILDINGS

THESE STRUCTURES WEAKEN THE EFFECT OF RADIATION BY 200 TO 400 TIMES, DEPENDING ON THE DEPTH AND THICKNESS OF THE SOIL DUSTING



***1972 Anti-Radiation shelters made of timber poster:  
protection factors of 200-400 (50-70cm earth cover)***



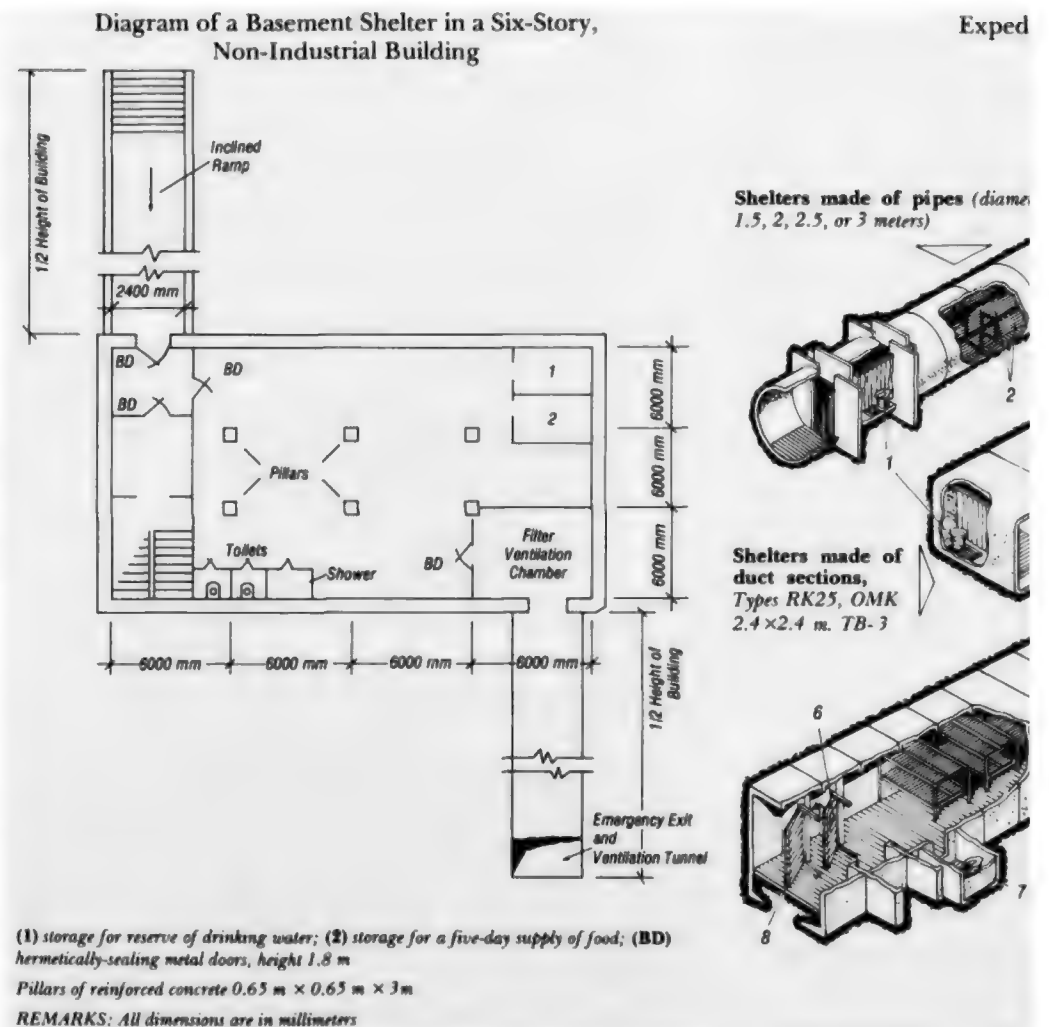
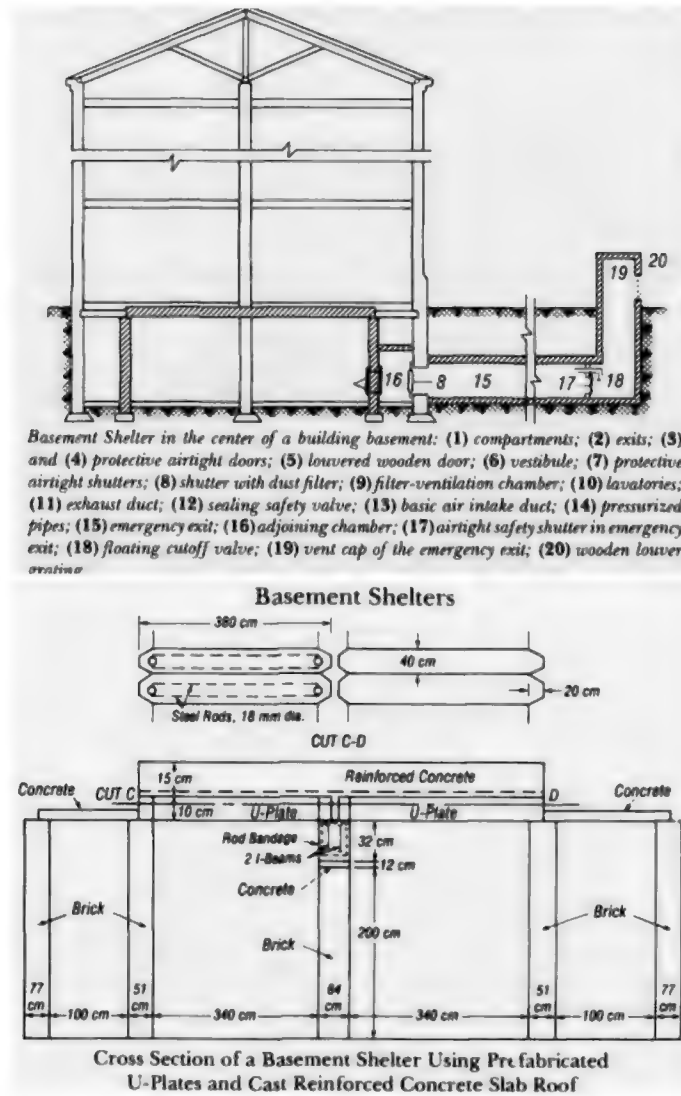


- Rung 1. Ostensible Crisis
- Rung 2. Political, Economic, and Diplomatic Gestures
- Rung 3. Solemn and Formal Declarations
- Rung 4. Hardening of Positions—Confrontation of Wills
- Rung 5. Show of Force
- Rung 6. Significant Mobilization
- Rung 7. “Legal” Harassment—Retortions
- Rung 8. Harassing Acts of Violence
- Rung 9. Dramatic Military Confrontations
- Rung 10. Provocative Breaking Off of Diplomatic Relations
- Rung 11. Super-Ready Status
- Rung 12. Large Conventional War (or Actions)
- Rung 13. Large Compound Escalation
- Rung 14. Declaration of Limited Conventional War
- Rung 15. Barely Nuclear War
- Rung 16. Nuclear “Ultimatums”
- Rung 17. Limited Evacuation (Approximately 20 per cent)
- Rung 18. Spectacular Show or Demonstration of Force
- Rung 19. “Justifiable” Counterforce Attacks
- Rung 20. “Peaceful” World-Wide Embargo or Blockade
- Rung 21. Local Nuclear War—Exemplary
- Rung 22. Declaration of Limited Nuclear War
- Rung 23. Local Nuclear War—Military
- Rung 24. Unusual, Provocative, and Significant Countermeasures
- Rung 25. Evacuation (Approximately 70 per cent)
- Rung 26. Demonstration Attack on Zone of Interior
- Rung 27. Exemplary Attack on Military
- Rung 28. Exemplary Attacks Against Property
- Rung 29. Exemplary Attacks on Population
- Rung 30. Complete Evacuation (Approximately 95 per cent)
- Rung 31. Reciprocal Reprisals
- Rung 32. Formal Declaration of “General” War
- Rung 33. Slow-Motion Counter-“Property” War
- Rung 34. Slow-Motion Counterforce War
- Rung 35. Constrained Force-Reduction Salvo



- Rung 36. Constrained Disarming Attack
- Rung 37. Counterforce-with-Avoidance Attack
- Rung 38. Unmodified Counterforce Attack
- Rung 39. Slow-Motion Countercity War
- Rung 40. Countervalue Salvo
- Rung 41. Augmented Disarming Attack
- Rung 42. Civilian Devastation Attack
- Rung 43. Some Other Kinds of Controlled General War
- Rung 44. Spasm or Insensate War

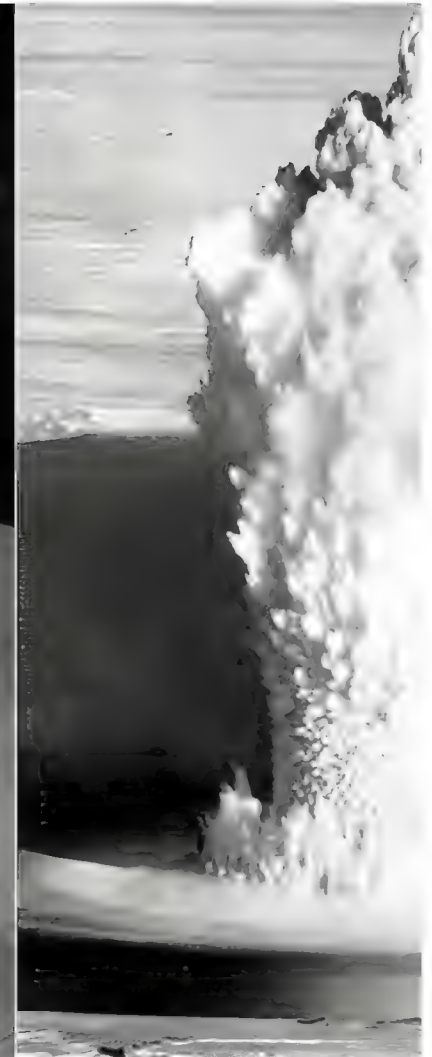




**Dr Leon Goure, Shelters in Soviet War Survival Strategy, ADA**



**RUSSIAN 3.5 KT UNDERWATER TEST IN 1955**



**RUSSIAN 6 KT UNDERWATER TEST**

**Joe-4 (RDS-6) 400 kt Teller "alarm clock"-design H-bomb  
photo taken 15 seconds after detonation 12 August 1953**





28 KT RDS-4 AIR BURST AT 600 M ALTITUDE, 1953





Litvinov BV  
Atomic energy  
not only for  
military  
purposes:  
monograph / BV  
Litvinov;  
Russian  
Academy of  
Sciences, Ural  
branch. -  
Yekaterinburg,  
2004. - 560 pp

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**Хроника основных р  
и достижений РФЯЦ-**

**Milestone**

1946 – 9 апреля вышло правительственное постановление о создании первого в стране специализированного научно-исследовательского и производственного центра КБ-11 для конструирования и изготовления «реактивных двигателей С» (РДС).

1948–1954 – предложен, разработан и реализован новый принцип нейтронного инициирования ядерных зарядов, что позволило существенно повысить эффективность их действия.

1949 – построена установка ФКБН (физический котел на быстрых нейтронах), на которой были экспериментально определены критические массы плутония-239 и урана-235 для первых атомных зарядов РДС-1 и РДС-2. 29 августа успешно испытана первая советская атомная бомба РДС-1 на Семипалатинском полигоне.

1951 – проведено первое воздушное испытание атомной бомбы с качественно новой системой обеспечения сферического обжатия. Нововведение позволило уменьшить массу изделия по сравнению с РДС-1 и увеличить его мощность более чем в два раза.

1953 – 12 августа испытан заряд для первой термоядерной транспортабельной авиабомбы.

1955 – 22 ноября испытан термоядерный заряд с принципиально новой физической схемой атомного обжатия.

1957 – обеспечен прорыв в повышении удельных характеристик ядерных зарядов.

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## Образцы ядерного оружия (экспонаты музея РФЯЦ-ВНИИЭФ)

### Specimens of Nuclear Weapons (Exhibits of the VNIIEF Museum)

#### Первая атомная бомба СССР

Ядерный заряд испытан 29 августа 1949 года на Семипалатинском полигоне. Мощность заряда до 20 кт тротилового эквивалента.

#### USSR's first A-bomb

The nuclear charge was tested at the Semipalatinsk Test Site on August 29, 1949. Yield: up to 20 kt.



Образцы ядерного оружия (музей РФЯЦ-ВНИИЭФ)

Specimens of nuclear weapons (VNIIEF Museum)

#### Первая тактическая серийная атомная бомба

#### First serial tactical A-bomb

Испытана в 1953 году на Семипалатинском полигоне. Мощность заряда до 30 кт тротилового эквивалента. На вооружении с 1954 до 1965 года.

Tested at the Semipalatinsk Test Site on August 29, 1949. Yield: up to 20 kt.

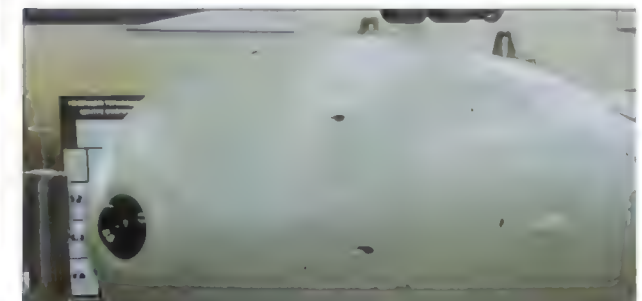


#### Первая водородная бомба

#### First H-bomb

Ядерный заряд испытан 12 августа 1953 года на Семипалатинском полигоне. Мощность заряда до 400 кт тротилового эквивалента.

The nuclear charge was tested at the Semipalatinsk Test Site on August 12, 1953. Yield: up to 400 kt.









Разработка ядерных боеприпасов

Development of nuclear munitions

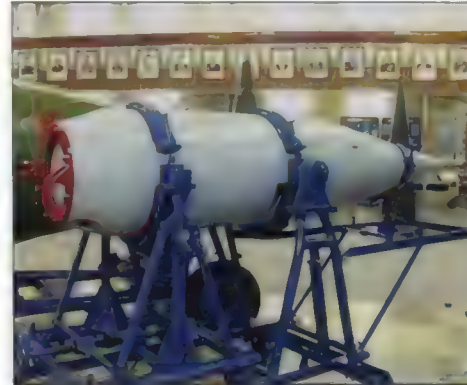
### Первая ядерная боевая часть для тактической ракеты

Мощность заряда до 10 кт тротилового эквивалента. Дальность полета до 32 км. На вооружении с 1960 до 1967 года.



### First nuclear warhead for tactical missile

Yield: up to 10 kt. Range: up to 32 km. In service in 1960–1967.



### Термоядерный боевой блок для первой межконтинентальной баллистической ракеты с разделяющейся головной частью

Мощность заряда более 2 Мт тротилового эквивалента. Дальность полета до 12 000 км. На вооружении с 1970 до 1979 года.



### Thermonuclear combat unit for the first intercontinental ballistic missile with a multiple reentry warhead

Yield: over 2 Mt. Range: up to 12,000 km. In service in 1970–1979.

Образцы ядерного оружия (музей РФЯЦ-ВНИИЭФ)

Specimens of nuclear weapons

### Первая ядерная боевая часть для баллистической ракеты среднего радиуса действия

Мощность заряда до 40 кт тротилового эквивалента. Дальность полета до 1200 км. На вооружении с 1955 до 1960 года.



### First nuclear warhead for medium range ballistic missile

### Первая термоядерная боевая часть для межконтинентальной баллистической ракеты

Мощность заряда до 3 Мт тротилового эквивалента. Дальность полета до 8500 км. На вооружении с 1960 до 1966 года.



### First thermonuclear warhead for intercontinental ballistic missile

Yield: up to 3 Mt. Range: up to 8500 km. In service in 1960–1966.









Разработка ядерных боеприпасов

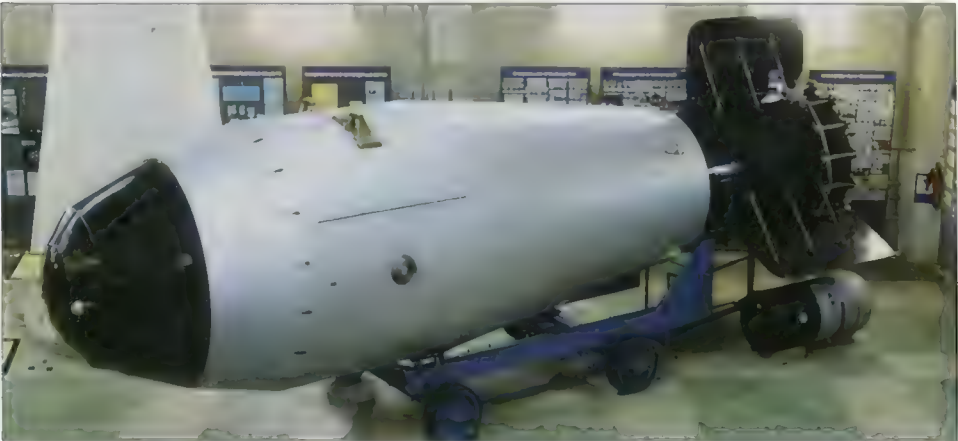
Development of nuclear munitions

**Самая мощная в мире экспериментальная водородная бомба**

**World's most powerful experimental H-bomb**

Испытана 30 октября 1961 года на полигоне «Новая Земля» на половинную мощность. Расчетная мощность более 100 Мт тротилового эквивалента.

Tested to half-yield at the Novaya Zemlya Test Site on October 30, 1961. Estimated yield: over 100 Mt.



**Термоядерные боевые части для оперативно-тактических ракет**

**Thermonuclear warheads for operational tactical missiles**



1 — Первая термоядерная боевая часть для оперативно-тактической ракеты. Мощность заряда до 300 кт тротилового эквивалента. Дальность полета до 900 км. На

Образцы ядерного оружия (музей РФЯЦ-ВНИИЭФ)

Specimens of nuclear weapons

**Термоядерный боевой блок для ракеты среднего радиуса действия с разделяющейся головной частью**

**Thermonuclear warhead for medium range missile with a multiple**



Суммарная мощность заряда до 400 кт тротилового эквивалента. Дальность полета до 5000 км. На вооружении с 1976 до 1991 года. Снята с вооружения по Договору о РСМД.

Total yield: up to 400 kt of TNT equivalent. Range up to 5000 km. In service from 1976 to 1991. Withdrawn from service under the CTRT.



Общий вид музея РФЯЦ-ВНИИЭФ  
The VNIIEF museum. Overall view









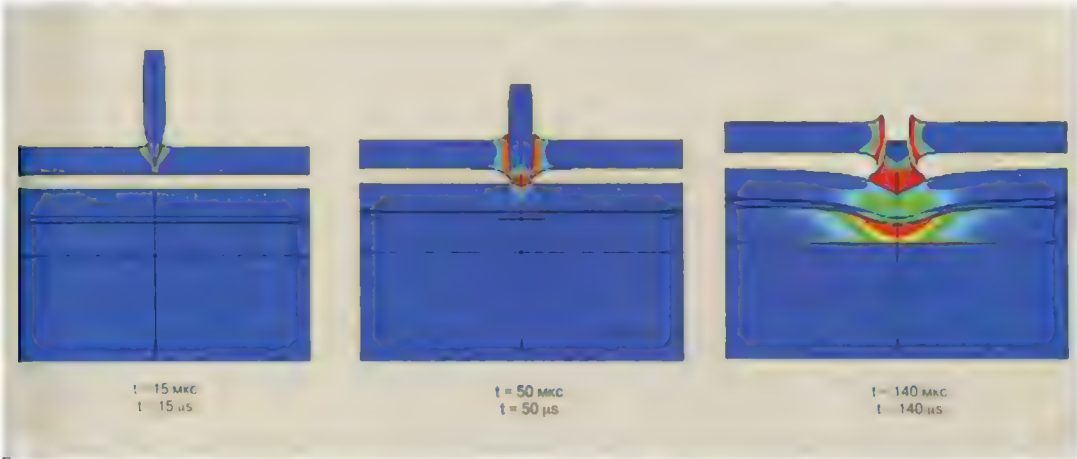
щих необходимую для расчетов информацию о свойствах веществ, отработаны новые технологии проведения расчетно-теоретических работ по основным направлениям деятельности.

Серьезные успехи достигнуты специалистами института в следующих областях:

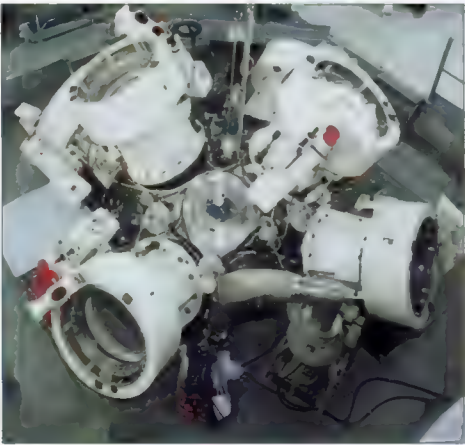
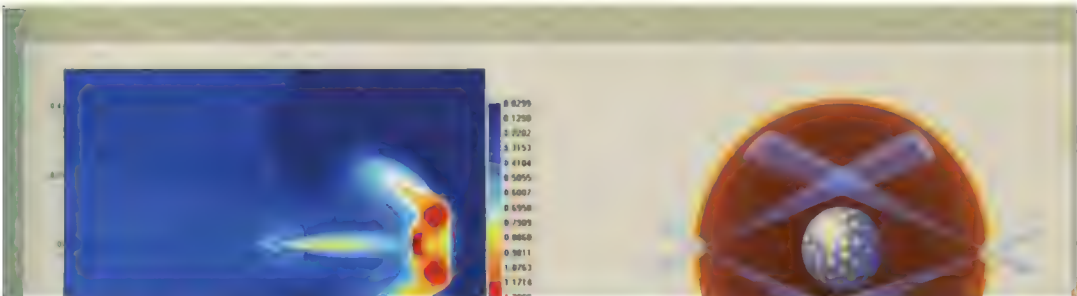
- моделирование на ЭВМ многомерных задач физики ядерного взрыва, лазерной физики в полной замкнутой постановке с одновременным учетом всех ведущих физических процессов;

The VNIIEF specialists have succeeded in the following areas:

- computer-aided simulation of multivariate nuclear explosion and laser physics problems in a complete closed statement with all leading physical processes taken into account;
- studies into characteristics of turbulence; it has been for the first time that results of a range of experimental measurements were interpreted through direct numerical simulation of gravitational turbulent mixing using multiprocessor computers;



Процесс деформации материала при внешнем воздействии  
A material deformation process at external effects



Здание (1) и сферическая камера взаимодействия (2)  
установки «Искра-5»  
The «Iskra-5» building (1)  
and spherical interaction chamber (2)

(уровень неоднородности < 3 %) симметрию рентгеновского поля на поверхности сферической микромишени и осуществить уникальные исследования сжатия оболочек с DT-топливом в симметричных условиях. Проведены экспериментальные исследования влияния асимметрии оболочки и рентгеновского поля на эффективность работы термоядерной мишени, результаты которых проанализированы с помощью двумер-



Эксперимент в симметричных условиях  
Target component in symmetric conditions

tions. Ex X-ray field get openings have program Mathem. ment an







Взрыв водородной бомбы РДС-37 22 ноября 1955 года на Семипалатинском полигоне  
Explosion of the RDS-37 H-bomb at the Semipalatinsk test site on November 22, 1955



In the morning of September 21, 1955, the USSR's first underwater nuclear explosion was conducted in the Chernaya Bay by detonation of the T-5 torpedo warhead at a depth of 12 m. Its yield was 3.5 kt. Following automatic generation of the signal to

Испытания ядерных боеприпасов и полигоны

Tests of nuclear mu

### 71-й полигон ВВС и войсковые учения на Тоцком полигоне с применением атомной бомбы

В 1950–1951 годах шла подготовка к первому испытанию в СССР атомной бомбы РДС-3 со сбросом ее с самолета в режиме боевого бомбометания. Такое первое испытание состоялось 18 октября 1951 года на Семипалатинском полигоне: авиабомба мощностью 42 кт была взорвана над его опытным полем на высоте 380 м. Так впервые в СССР был произведен воздушный ЯВ. И этот результат, по существу, явился основой для принятия решения об оснащении советских ВВС ядерным оружием: было организовано ядерное производство авиабомб РДС-4 и их носителей – самолетов Ту-4.

В государственной системе организации и проведения ЯИ большую роль сыграл 71-й полигон ВВС, расположенный в Крыму (в районе пос. Багерово), который был создан в августе 1947 года. Его личный состав в 1949–1962 годах участвовал в 178 ядерных испытаниях: на СИП – в 94 ЯИ, на СИПНЗ – в 83 и еще в одном – на Тоцком полигоне, в ходе войскового учения с применением атомной бомбы в режиме бомбометания с большой высоты.

На этом полигоне ВВС подвергались также соответствующим испытаниям и самолеты – носители атомных бомб, и самолеты-лаборатории: Ту-16, Ил-28 и Су-76 (на СИП); Ту-16, Ту-35 и ЗМ (на СИПНЗ); отрабатывался Бе-12, который проходил испытания как носитель противолодочного ядерного оружия без привлечения к натурным ЯИ.

Следует отметить, что результаты исследований воздействия ЯВ привели к выводу о возможности эффективного действия Вооруженных Сил на поле боя в условиях применения противником ядерного оружия. В этом контексте следует рассматривать и войсковые учения, проводившиеся на Тоцком артиллерийском полигоне в Оренбургской области в сентябре 1954 года, в ходе которых был произведен воздушный ЯВ мощностью 40 кт на высоте 350 м. Такая высота подрыва изделия РДС-3 обеспечивала незначительное радиоактивное загрязнение территории в радиусе 100 км от места взрыва.

### 71st Air Force and military at the Totsk in the A-bomb

In 1950–1951, ef prepare for the cou to be dropped from tions. This test was Semipalatinsk test the altitude of 380 the first Soviet air n essentially the basi Force with nuclear the manufacture of aircraft (Tu-4).

Within the govern mance system, this test range near Ba( set up in August 19 involved in 178 Semipalatinsk, 83 undertaken at the involving the use o conditions.

This Air Force te tests of nuclear bo ing Tu-16, Il-28 and 35 and 3M (at Nov the Be-12 aircraft weapons with no fu

It is worth noting nuclear explosions could act effective weapon by the ei address the milita range in the Orenb nuclear explosion c m. Such altitude radioactive conta









Испытания ядерных боеприпасов и полигоны

Tests of nuclear munitions and test sites



Испытания ядерных боеприпасов и полигоны

Tests of nuclear munitions and test sites



Атомную бомбу сбросил на обозначенную цель на Тоцком полигоне экипаж подполковника В.Я. Кутырчева, который уже имел опыт пяти летных испытаний атомной бомбы на Семипалатинском полигоне. Произошло это 14 сентября 1954 года в 9 ч 34 мин.

В подготовке и в ходе учения приняли активное участие руководство Министерства среднего машиностроения СССР во главе с В.А. Малышевым, а также ведущие ученые – создатели ядерного оружия И.В. Курчатов, К.И. Щелкин и руководство всех родов войск и сил флота, командование всех групп войск, военных округов, округов противовоздушной обороны, флотов и флотилий. На учение были приглашены все министры обороны дружественных в то время нам стран. Войсковое учение под кодом «Снежок» в штабных документах называлось: «Прорыв подготовленной тактической обороны противника с применением атомного оружия».

17 сентября ТАСС сообщило: «В соответствии с планом научно-исследовательских и экспериментальных работ в последние дни в Советском Союзе было проведено испытание одного из видов атомного оружия. Целью испытания было изучение действий атомного взрыва. При испытании



epicenter and in the radioactive cloud pattern. The exercise involved some 45,000 troops and this was the USSR's only large-scale military exercise in conditions of a full-scale nuclear explosion. This unique exercise was commanded by Marshal of the Soviet Union G.K. Zhukov.

The A-bomb was dropped onto the specified target at the Toskoye range by the crew led by Lieutenant-Colonel V.Ya. Kutyrchev who had an earlier experience of five A-bomb flight tests at the Semipalatinsk test site. The event took place at 9.34 a.m. September 14, 1954.

The work to prepare and conduct the exercise involved the leaders of the Ministry of Medium-Machine Building headed by V.A. Malyshev, leading nuclear weapons scientists including I.V. Kurchatov and K.I. Shchelkin, leaders of all arms and naval forces, and commanders of all groups of troops, military districts, air defense districts, fleets and flotillas. The exercise was attended by all defense ministers of the USSR's friendly countries at the time. Codenamed «Snezhok», it was referred to in staff documents as the «Break through the enemy's prepared tactical defense using nuclear weapons».

A TASS report of September 17 read: «In keeping with the plan of research and experimental work, the Soviet Union has recently conducted a test of one of the nuclear weapon types. The purpose of the test was to study the effects of a nuclear explosion. Valuable results have been obtained during the test that will help Soviet scientists and engineers with successful



международным наблюдением и посредством соответствующих международных процедур потенциальные блага от любого мирного применения ядерных взрывов были доступны государствам – участникам настоящего

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## Импульсные магнитогидродинамические генераторы (МГД-генераторы)

Предназначены для использования в качестве первичного мощного (десятки и сотни мегаватт) источника электрической энергии кратковременного действия (~10 с) в системах автономного электропитания различных объектов. В МГД-генераторах происходит прямое (непосредственное) преобразование тепловой энергии в электрическую, поэтому они обладают рядом уникальных свойств.

Благодаря этим свойствам МГД-генераторы импульсного и кратковременного (минуты) действия могут обеспечить такие тактико-технические характеристики, которые недоступны другим, прежде всего традиционным, источникам электрической энергии.

Преимущества плазменных МГД-генераторов по сравнению с другими первичными источниками электрической энергии начинают проявляться с мультимегаваттного уровня мощностей.

В отечественных импульсных МГД-генераторах в качестве источника тепловой энергии и рабочего тела используются специальные твердые (пороховые) плазмообразующие топлива (ТПТ), обеспечивающие температуру продуктов сгорания в генераторе плазмы до 4400 К при давлениях 30–100 атм.

При создании различных штатных (натурных) МГД-установок на основе импульсных МГД-генераторов использовался блочный принцип. Всего было создано четыре базовых варианта импульсных МГД-генераторов на ТПТ: «Памир», «Урал», «Сахалин», «Союз».

Отечественные импульсные МГД-генераторы на твердом (пороховом) топливе начали создаваться кооперацией предприятий СССР примерно с 1970 года и выпускаются ОАО «НМЗ».

За период с 1971-го по 1993 год были разработаны такие импульсные МГД-установки, как «Памир», «Урал», «Прикаспий», «Хибины», «Союз», «Сахалин» и другие. Всего было изготовлено около 20 натурных импульсных

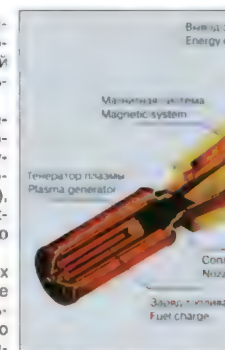


Схема импульсного МГД-генератора  
Diagram of the pulse MHD-generator

## Pulse magi gene

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**ЯБП для первой межконтинентальной  
баллистической ракеты Р-7  
NM for the first intercontinental  
ballistic missile R-7**







## Разработка ядерных боеприпасов ВНИИА

## Development of Nuclear Munitions in VNIIA

Разработкой ЯБП в нашей стране занимаются три организации: РФЯЦ-ВНИИЭФ, РФЯЦ-ВНИИТФ и ВНИИА.

Для того, чтобы была более понятна область деятельности ВНИИА, целесообразно привести обобщенную структуру ядерного боеприпаса.

Как видно из представленной структуры, любой ЯБП содержит четыре основных устройства:

- ядерный заряд (ЯЗ), содержащий взрывчатое вещество и ядерный материал, и обеспечивающий при ядерном взрыве основное энерговыделение боеприпаса за счет протекающих в нем ядерных реакций;
- систему электрического и нейтронного инициирования (система инициирования) ядерного заряда. В ее функции входит выработка высоковольтных электрических импульсов для подрыва химического взрывчатого вещества ядерного заряда, а также генерация нейтронного импульса в момент обжатия ядерного материала. Эта система является самой ответственной и самой сложной из неядерных компонентов ядерного боеприпаса;
- пусковую систему (совокупность исполнительных устройств), ответственную за запуск системы инициирования в нужный момент (например, на заданной высоте в атмосфере или на заданной глубине в водной среде);
- систему предохранения, в функции которой входит исключение ядерного взрыва во всех нештатных ситуациях, таких как отказы компонентов ЯБП, аварийные воздействия (пожар, удар, прострел и т. п.), несанкционированные (ошибочные или преднамеренные) действия обслуживающего персонала или злоумышленника.

Кроме того, в состав некоторых ЯБП входит автономный источник питания.

Указанные устройства размещаются в собственном

There are three Russian organizations responsible for development of nuclear munitions in the country: VNIIEF, VNIITF and VNIIA.

The diagram presented below shows the general structure of nuclear munition to illustrate more graphically what VNIIA is in charge of.

The diagram demonstrates that any nuclear munition contains four basic devices:

- a nuclear charge that contains the explosive and the nuclear material and accounts for most of the munition energy released in a nuclear explosion thanks to nuclear reactions within it;
- a system for electric and neutron initiation (initiation system) of the nuclear charge. Its functions include generation of high-voltage electric pulses to detonate the chemical explosive of the nuclear charge and generation of a neutron pulse at the time the nuclear material is compressed. This is the most responsible and most complicated system among non-nuclear components of the nuclear munition;
- a trigger system (a combination of actuators) responsible for triggering the initiation system at the required time (e.g. at the preset height in the atmosphere or at the preset depth in water);
- a safety system with the function of ruling out nuclear explosion in all emergencies, such as failures of NM components, emergency impacts (fire, shock, streaming, etc.) and unauthorized (erroneous or premeditated) actions of attending personnel or the intruder.

Besides, some nuclear munitions include an autonomous power supply source.

Each of the above devices has a body of its own or an individual compartment within the carrier.

In accordance with the described nuclear munition struc-

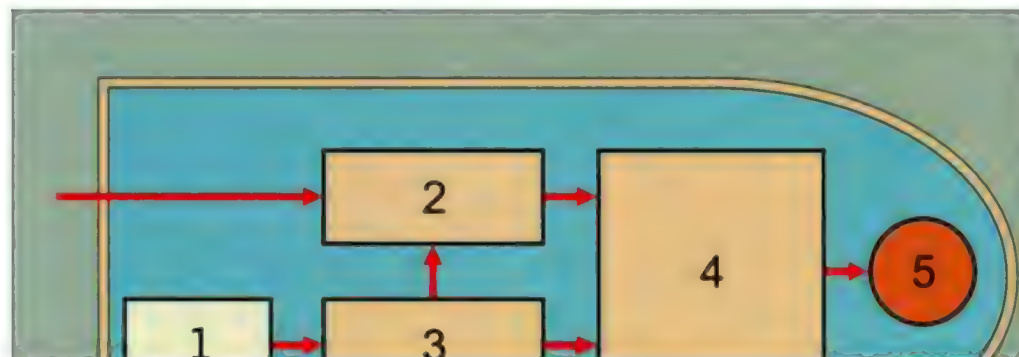


корпусе ЯБП или отсеке носителя.

ture, VNIIA develops nuclear munitions as a whole, the safety

**Структура ядерного  
боеприпаса  
NM structure**

- 1 – источник питания
- 2 – система пуска
- 3 – система предохранения
- 4 – система инициирования
- 5 – ядерный заряд
- 6 – корпус







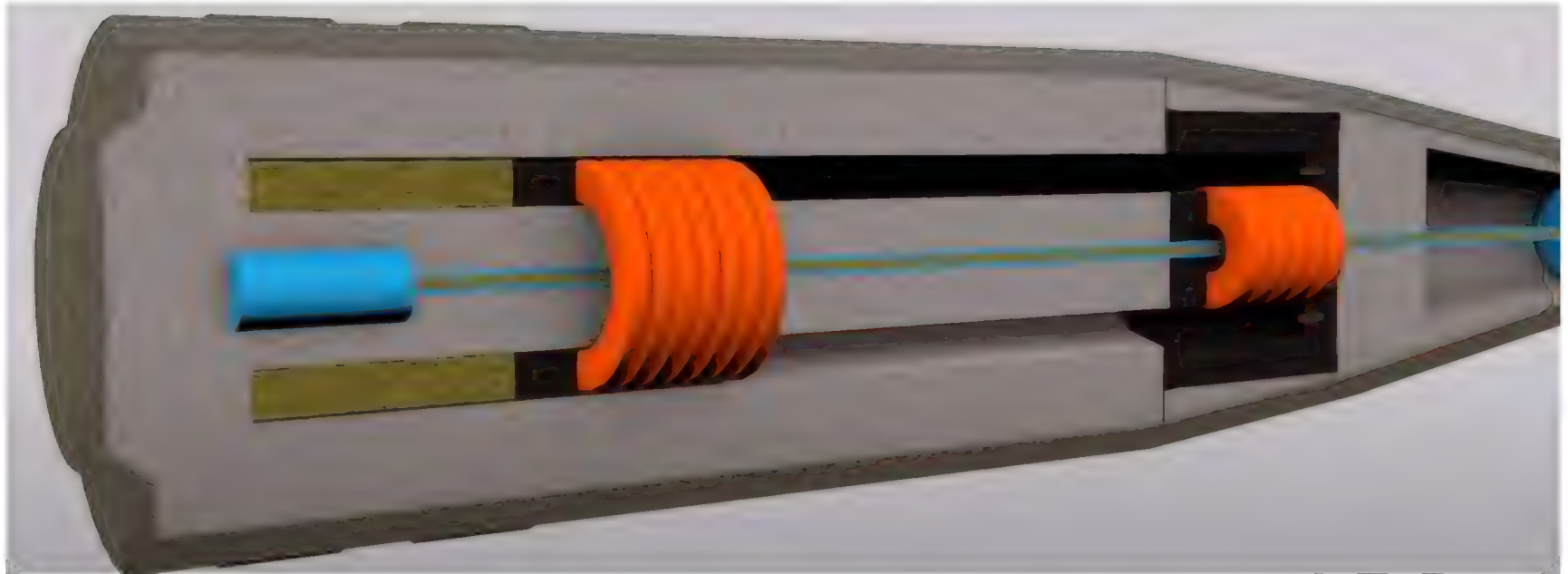


Разработка ядерных боеприпасов

Development of nuclear munitions

Системы электрического и нейтронного инициирования ЯЗ Electric and neutr



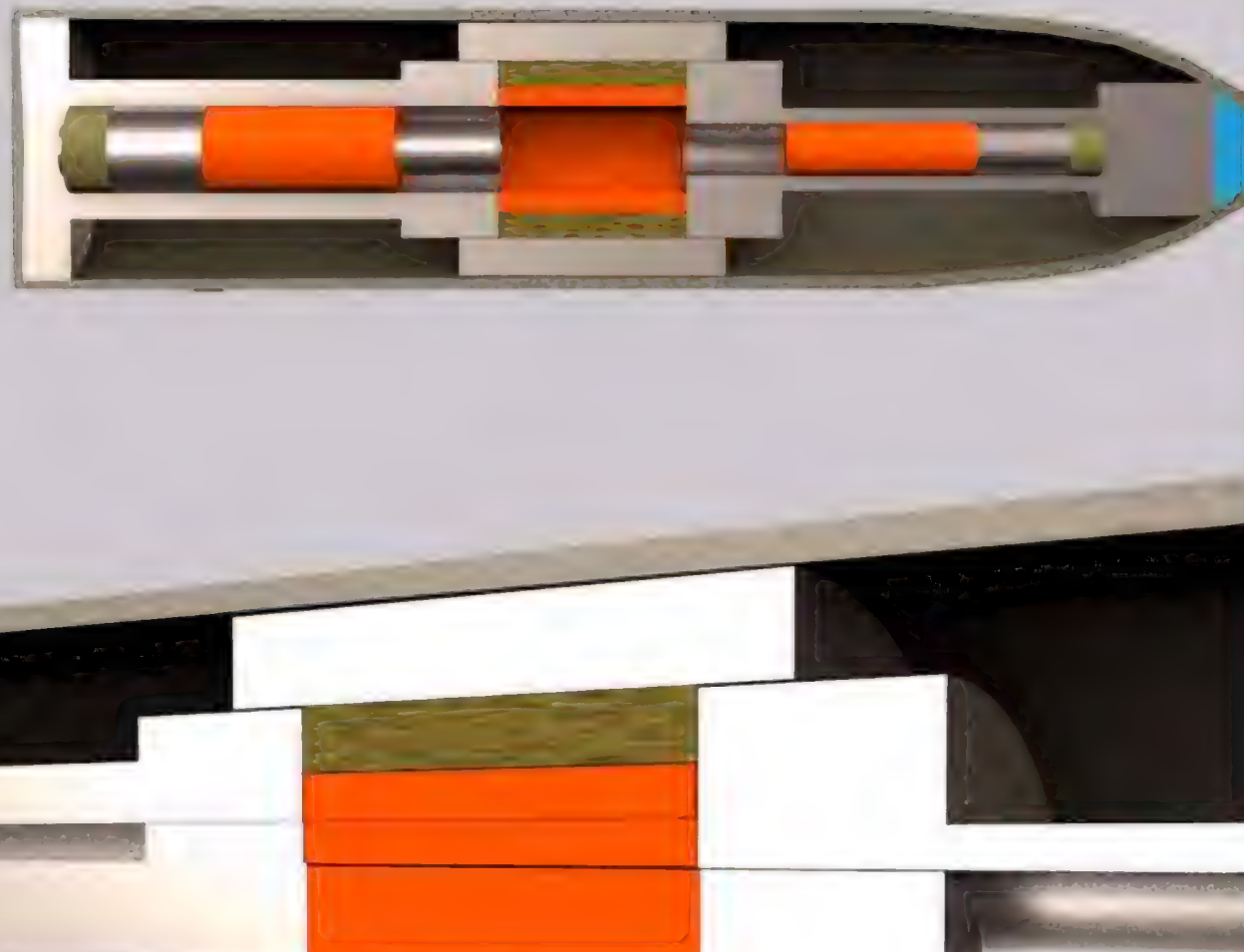


ABOVE: Russian illustration of American's **very inefficient first design of a 15kt oralloy (highly enriched U235) nuclear artillery shell, a total waste of money and materials, as the yield-predicting warhead designer of the first Russian tactical shell explains in his article (discussed in detail later in this blog post)**. This American design of firing hollow rings of uranium-235 was a very inefficient device. (It is not much better than the design of the gun-type assembly Hiroshima bomb which contained enough oralloy to yield 1 megaton, but was so inefficient it yielded just 16 kt!) More efficient warhead designer Dr Theodore Taylor slammed gun-type assembly weapons as groupthink "committee" designs, based on minimising risks of a misfire, not maximising efficient use of fissile material!)

ABOVE: Russian illustration of a re-design of the America gun-assembly uranium-235 bomb to try to improve efficiency (not by much!). Here, each of the U235 pieces is fired at the other, to reduce assembly time and thus to allow a larger supercritical mass to be assembled before preinitiation risks (fizzle risk) becomes appreciable! American designs are obsessed with minimising risks. Russians are obsessed with maximising performance, efficiency and reducing costs to a minimum (the same approach used with their tanks etc in WWII).



# W-33



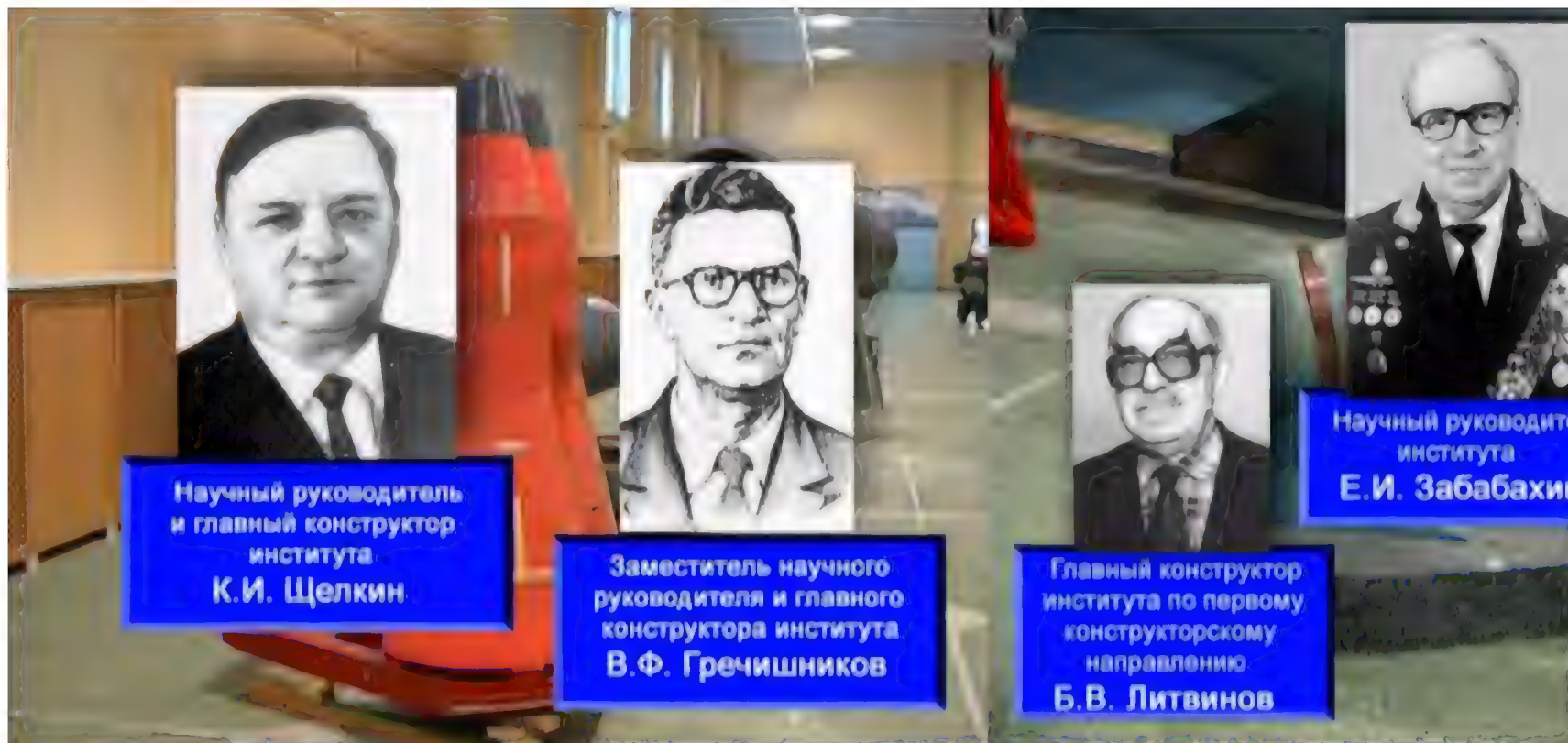


# W-48



ABOVE: Russian illustration of the first cheap, efficient American linear-implosion plutonium artillery shell, the W48, first put into service in 1963, SEVEN YEARS after the first plutonium linear-implosion Russian tactical nuclear shell was successfully tested with 14 kt yield on 16 March 1956! This American W48 old nuclear shell remained in service from 1963 until 1992, when disarmers withdrew it, allegedly as appeasement, to somehow prevent WWII via Russia invading Ukraine (or whatever lies are fashionable!).



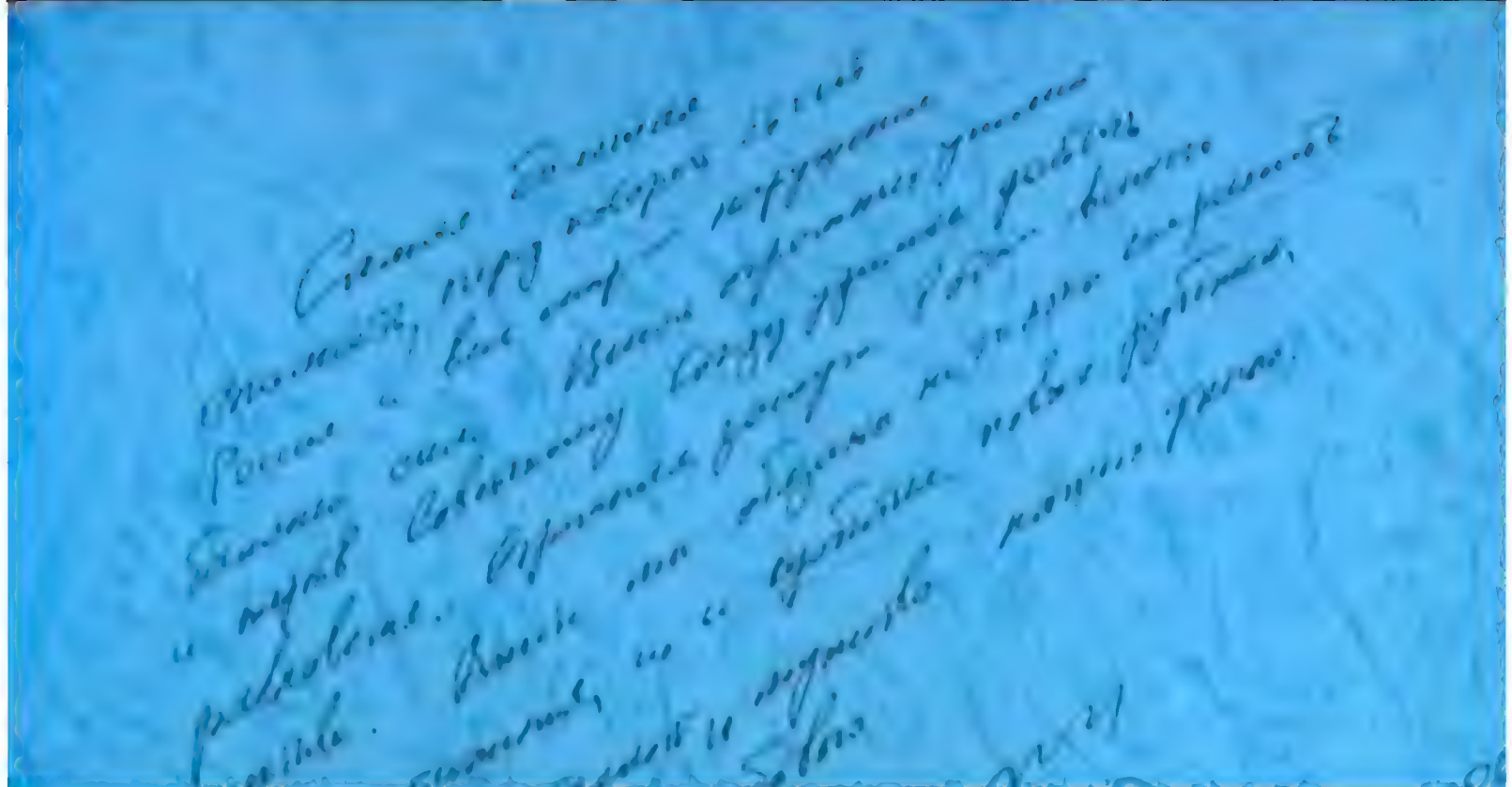


ABOVE: Russian nuclear warhead designers of the 170 and 210 kt MIRV thermonuclear warheads and the 2.5kt smallest ever diameter nuclear artillery shell (linear implosion), all at the Snezhinsk (formerly Chelyabinsk-70) nuclear warhead design laboratory. They are not as well paid as their American counterparts, but are respected and awarded medals and visits and praise by President Putin (compare faces above to the photo below).

President Putin meeting Russian nuclear warhead designers in 2000, and writing his praise of Snezhinsk nuclear lab's warheads! President Biden, by contrast, campaigned against the nuclear deterrence of invasions, even criticising Donald Trump's modest efforts to convert a relatively few old, low yield W76 Trident warheads into ad hoc tactical warheads four years ago, AFTER Putin had seized Crimea! Duhhh! The Cold War propaganda for Western nuclear disarmament is still going strong today despite all the lives lost in all the wars and invasions that could have been prevented by credible nuclear deterrence since 1992! Tactical nuclear weapons are not regulated by "arms control" liars, so Russia has thousands (precise number UNKNOWN!), and America has zero specifically designed tactical weapons (as we'll see later, the neutron output of low-yield dial-a-yield options on strategic warheads like the B61 are pathetic compared to purpose designed tactical nuclear warheads, so aren't a credible deterrent, a fact covered-up by disarmers). Translation from the 2005 Snezhinsk nuclear weapons film: "In 2000 the President of the Russian Federation visited the All-Russian Scientific Research Institute of Technical Physics. He examined the exposition of the museum of nuclear weapons and left the following entry in the book of honored visitors: *The*



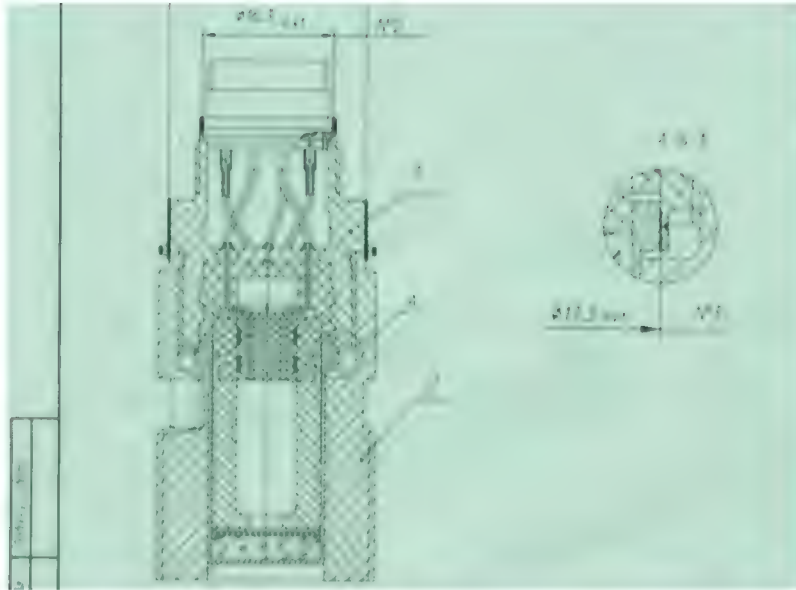




*biggest danger facing Russia and the whole world is the violation of the balance of power at the cost of huge efforts and sacrifices to the Soviet. The Union managed to achieve a balance of great merit in this, due to your team together. We are obliged not only to maintain the existing achievements but also to achieve new frontiers relying on the talent and courage of our scientists. With hope and love, Vladimir Vladimirovich, March 31, 2000"*



ABOVE: protected underground Russian launch controller centre for SS18 (Satan) ICBM's. Despite the "dead hand" automatic override system (which supposedly automatically launches missiles after a sustained loss of communications from Russian leaders), basic firing is done using relatively simple, low-tech equipment that is hardened against nuclear effects, e.g. resistant to EMP and shielded to give radiation protection against fallout collateral damage. Even if America could knockout such missiles, there is no guarantee that Russia would not - *in times of intense crisis such as a US-Russian conventional war* - change its basic doctrine to launch them on warning, before American missiles have arrived! Then American warheads would be uselessly blowing up EMPTY SS18 silos! Duh!!



ABOVE: declassified blueprint of Russian nuclear weapon detonator design. Everything they designed was more suitable for cheaper mass production than Western technology, maximising efficiency rather than minimising misfire risks which is the Western idea!



# Secret Oct '49 Russian forecast of US of atom bombs

По Вашей просьбе направляю Вам справку о производстве атомных бомб в США, составленную профессором ТЕРРИЛЛИМ и доктором РИНСОМ.

ПРИЛОЖЕНИЕ: по тексту, на 6 л.

С. САВЧЕНКО  
(1912)

27 - ОКТЯБРЯ 1945 ГОДА  
# 3472/c

**(This report also mentions the improved - levitated - Pu239 bomb design for using just 4.67 kg core)**

# Uranium mining in Congo, Colorado, South Africa and Portugal

### О ПРОИЗВОДСТВЕ АТОМНЫХ БОМБ В США

В справке оцениваются возможные ресурсы уранового сырья, которыми располагают США, производство в США плутония и урана-235, а также количество атомных бомб, производимых ежегодно в США. Справка составлена на основании материалов разведки с использованием официальных данных.

### 1. ОБЪЕМ ДОБЫЧИ УРАНА

Основным источником урана является Бельгийское Конго. Подавляющая часть добываемого там урана отправляется в США.

Количество добытой в Бельгийском Конго урановой руды в 1947г. и оценка возможной добычи урановой руды с 1948г. по 1952г. (в Бельгийском Конго, Канаде, США - штат Колорадо, Южной Африке и Португалии) в пересчете на уран приведены в следующей таблице:

в 1947г.	-	3400 тонн урана
в 1948г.	-	2100 " "
в 1949г.	-	1800 " "
в 1950г.	-	1400 " "
в 1951г.	-	1600 " "
в 1952г.	-	2100 " "

## Tons of uranium mined

**US gaseous diffusion U235 enrichment K-25 plant is 25% efficient: 1200 kg/year**

П. ПРОИЗВОДСТВО УГАРА-235

1. Заполняем таблицу (И-25)

Общая годовая потребность в уране для завода газовой диффузии составляет 750 тонн урана. Коэффициент полезного действия диффузионной установки равен 25%.

Годовая производительность завода газовой диффузии составляет 1200 кг. члена-235.

## 2. ЗАДАЧА ЭЛЕКТРОМАГНИТНОГО ОБРАЩЕНИЯ (У-12)

Электромагнитная разделительная установка имела весьма малый выход урана-235, а потребление энергии и рабочей силы было значительно больше, чем при других способах получения делящихся материалов.

В настоящее время большая часть оборудования завода (X-12) находится в резерве.

**Electromagnetic plant failed.**

2. ПРОИЗВОДСТВО ПЛУТОНИЯ

При общей загрузке одного Хамфордского котла в 200 тонн миталлического угля его мощность составляет 250 мегаватт.

При распаде 1 грамма урана-235 в сутки выделяющаяся в виде тепла мощность составляет 1 мегаватт.

При распаде 1 грамма урана-235 в котле образуется 0,8г плутония.

Считается, что котел в среднем работает около 340 дней в году.

**0.8 Pu g/day per MW of Hanford  
200 tons of uranium reactor  
(total reactor power = 250 MW).**

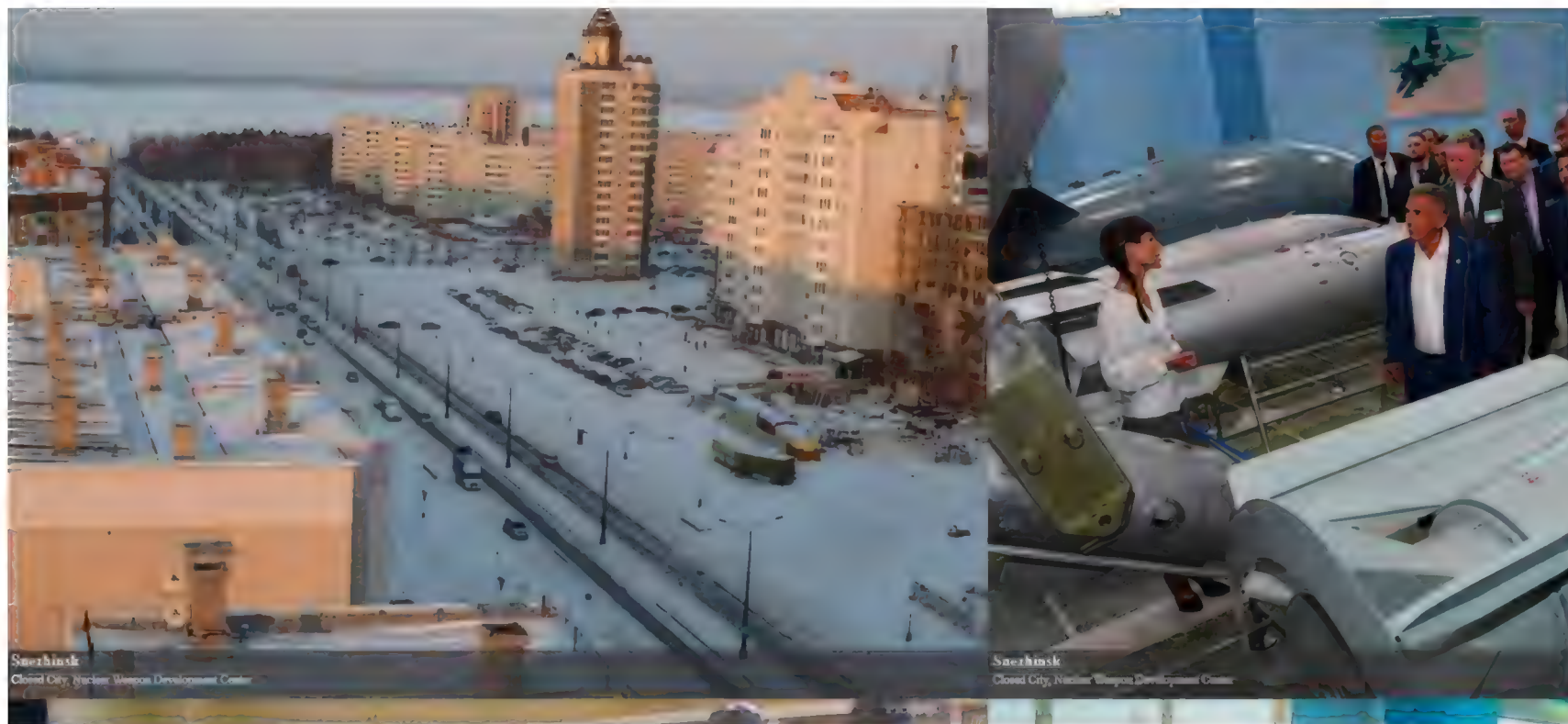
Hanfor  
340 da  
=68kg

with 3  
kg/mor

3 bomb  
kg of P  
U235 c















<https://en.newizv.ru/news/army/03-03-2018-atomic-charge-from-a-cannon-what-kind-of-artillery-nuclear-charges-does-russia-have>

The Russian army has means of delivering low-yield tactical nuclear weapons to strike at enemy troops at a distance of up to 45 kilometers.

by Igor Zot

*"The creation of tactical nuclear weapons, including for artillery systems, began immediately after the appearance of the first atomic bombs. In the Soviet Union, such a task was set for specialists at the beginning of 1952, and already in 1956, a successful test of the RDS-41 charge for a 406 mm caliber projectile took place. ... In the early 1970s, nuclear warheads were created in Snezhinsk [Russia's 2nd nuclear weapons design laboratory] for ammunition of 240 mm and 203 mm calibers for the B-4M towed howitzer; heavy towed mortar M-240, self-propelled mortar 2S4 "Tulip" and self-propelled artillery gun "Pion". ... 203-mm self-propelled guns 2S7 "Peony", which were put into operation in 1975. For them, the*

***power tactical ammunition "Kleshchevitsa", "Sazhenets" and "Perforator" were specially created ... The development of nuclear projectiles of 152.4 mm caliber is considered one of the brightest pages in the history of the creation of Soviet nuclear weapons. The creators of nuclear charges and nuclear ammunition based on them for artillery and mortar systems were awarded the USSR State Prizes (1973, 1974, 1984) and the Lenin Prize (1984)."***

ABOVE: "The creation of [Russian] tactical nuclear weapons, including for artillery systems, began immediately after the appearance of the first atomic bombs. In the Soviet Union, such a task was set for specialists at the beginning of 1952, and already in 1956, a successful [14 kt] test of the RDS-41 charge for a 406 mm caliber projectile took place. ... In the early 1970s, nuclear warheads were created in Snezhinsk [aka the Cold War lab Chelyabinsk-70, i.e. Russia's equivalent to America's Lawrence Livermore nuclear weapons designers lab; a huge number of photos of their currently stockpiled nuclear warheads have been declassified with museum plaque summaries of details of the delivery systems they are each intended for, their nuclear physics package internal layout which differs from ALL Western nuclear weapons, the names of their key designers, and so on; and we have included a summary of this vital data in this blog post for easy reference, since they are the overriding nuclear war threat under the current political situation seems to be Russia, since America disarmed itself of tactical nuclear warheads in the 1990s apparently to convince Russia it could not credibly oppose a Russian invasion in the mistaken belief that this would end the risk of a nuclear war] for ammunition of 240 mm and 203 mm calibers for the B-4M towed howitzer; heavy towed mortar M-240, self-propelled mortar 2S4 "Tulip" and self-propelled artillery gun 2S7 "Pion". ... 203-mm self-propelled guns 2S7 "Peony", which were put into operation in 1975. For them, low-power tactical ammunition "Kleshchevitsa", "Sazhenets" and "Perforator" were specially created ... The development of nuclear projectiles of 152.4 mm caliber is considered one of the brightest pages in the history of the creation of Soviet nuclear weapons. The creators of nuclear charges and nuclear ammunition based on them for artillery and mortar systems were awarded the USSR State Prizes (1973, 1974, 1984) and the Lenin Prize (1984)." - Igor Zot, *The Russian army has means of delivering low-yield tactical nuclear weapons to strike at enemy troops at a distance of up to 45 kilometers*, <https://en.newizv.ru/news/army/03-03-2022/an-atomic-charge-from-a-cannon-what-kind-of-artillery-nuclear-charges-does-russia-have>

Dr Shirkov, the quantum field theorist who was the yield prediction designer of the RDS-41 tactical 14 kt two-point 406-mm diameter Russian nuclear artillery shell at Sarov, which was tested successfully on 16 March 1956 yielding the maximum possible predicted design yield of 14 kt kilotons, winning him the 1958 Lenin Prize, has a published unclassified article (PDF version of full article linked here) about it online (webpage with summary of article including PDF link to full article is linked here). It was melon shaped, had a U238 reflector, and a thin Pu239 hollow core containing Po210-Be neutron initiator. At Irtysh River in Semipalatinsk, while they were waiting for the wind to stop blowing towards the town, to allow the RDS-41 to be safely surface burst (an air burst would not have created this fallout risk), Shirkov's friend Lev V. Ovsianikov became interested in the QFT renormalization group functional equations Shirkov was interested in, and solved them, publishing the solution in Proceedings of the Academy of Sciences just three weeks after their nuclear test: <https://scfh.ru/en/papers/the-tsar-projectile-for-nuclear-artillery/>.



*Combustion, Explosion, and Shock Waves, Vol. 36, No. 6, 2000*

## Development of the First Nuclear Charge RDS-41 (11D) for Artillery Projectile

V. P. Zhogin\*

Translated from *Fizika Goreniya i Vzryva*, Vol. 36, No. 6, pp. 14–20, November–December, 2000.

### EDITORIAL

In the early 1950s, all publications concerning M. A. Lavrent'ev showed some reticence. Sometimes, one could read a phrase typical of that time: "... took part in the creation of the nuclear shield of the Motherland ... ." Mikhail Alekseevich was even more

While preparing the jubilee issue of the Journal, the editorial board found it reasonable to publish the paper. Colleagues from the IEP did some editing (mainly decoding some technical abbreviations) and obtained permission for its publication. Thus, this paper appears on our pages.

The author of the article (in the last years

Fellow Russian nuclear weaponeer Vasilii P. Zhogin wrote in his paper, "Development of the First Nuclear Charge RDS 41 (11D) for Artillery Projectile", *Combustion, Explosion, and Shock Waves*, vol 36, November 2000, Issue 6, pages 689-694 ([translated from the Russian version in \*Fizika Goreniya i Vzryva\*, Vol. 36, No. 6, pp. 14–20, November–December, 2000](#)): "The result of this trial was so important that the team of implementors with Academician M. A. Lavrent'ev as its leader became Lenin Prize winners in 1958. This Prize was introduced anew and was the second after Kurchatov, Zel'dovich, Sakharov, and Khariton. ... In the U.S., the range nuclear test of the first nuclear charge MK-9 of diameter 280 mm (11 inches) was conducted on May 25, 1953 [[the 15 kt Grable shot of Upshot-Knothole in Nevada, which produced no significant fallout despite the fact that its 557.6 ft maximum fireball radius at second maximum thermal output exceeded the height of detonation of just 524 feet, a fact explained by RAND Corp's Dr Kellogg in the 1957 congressional hearings on fallout; the neutron induced Na-24 maximum dose rate near ground zero was only about 10 R/hr at 1 hour and decreased to merely 10 milli-Roentgens per hour at about 1 mile from ground zero!](#)]. ... The [RDS-41] focusing system was developed by V. P. Zhogin. ... Electric detonators were elaborated by M. I. Puzyrev's team. The neutron source was designed by A. I. Abramov ... a thermostable explosive composition was chosen for use in the charge. After a series of examinations, it was tested on the range of the Central SRI-58 by gun-firing of 2000 37-mm rounds to check their resistance to explosion. ... A test of the RDS-41 charge

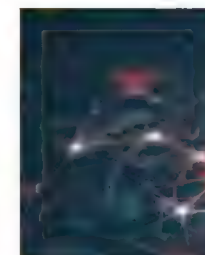
was planned for March, 1956. The charge enclosed in a projectile was to be placed on the floor of a wooden hut. ... finally the trial was set for the 16th of March ... The equipping operation was delayed for an hour (quite unexpectedly, the aluminum lids of the steel projectile body were jammed, and the projectile body required cooling with snow). ... Some hours later the device was detonated. The results of the test were beyond expectations. The charge exhibited the highest possible power." (Note that the seismic and fallout data at long range led the CIA in its Top Secret NIE report dated 16 May 1962 to wrongly assess this 16 March 1956 Russian nuclear test, "Joe 21" to be 30 kt yield, when in fact the accurate close-in yield determination by Russia was 14 kt. At least the CIA correctly deduced it was a surface burst!)

[infosmi.net/politic/280327-takticheskoe-yadernoe-oruzhie-rf-zastavit-ssha-i-nato-kapitulirovat/](https://infosmi.net/politic/280327-takticheskoe-yadernoe-oruzhie-rf-zastavit-ssha-i-nato-kapitulirovat/)

# Tactical nuclear weapons of the Russian Federation will force the US and NATO to capitulate



ENHANCED BY Gx



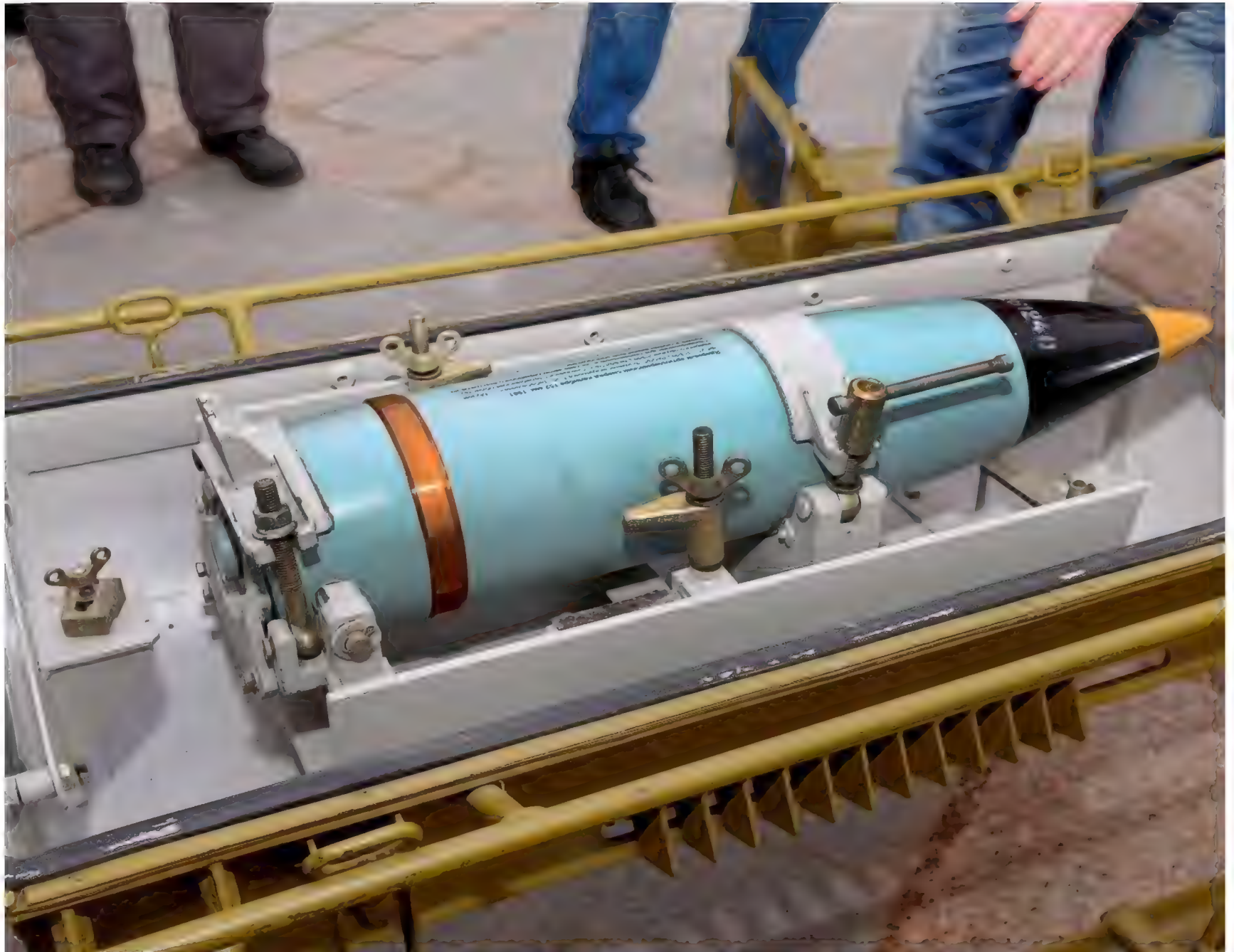
SOCIETY / 3 hours ago

Neural network

Novosibirsk, weather forecast for August 18, up to 16 °C

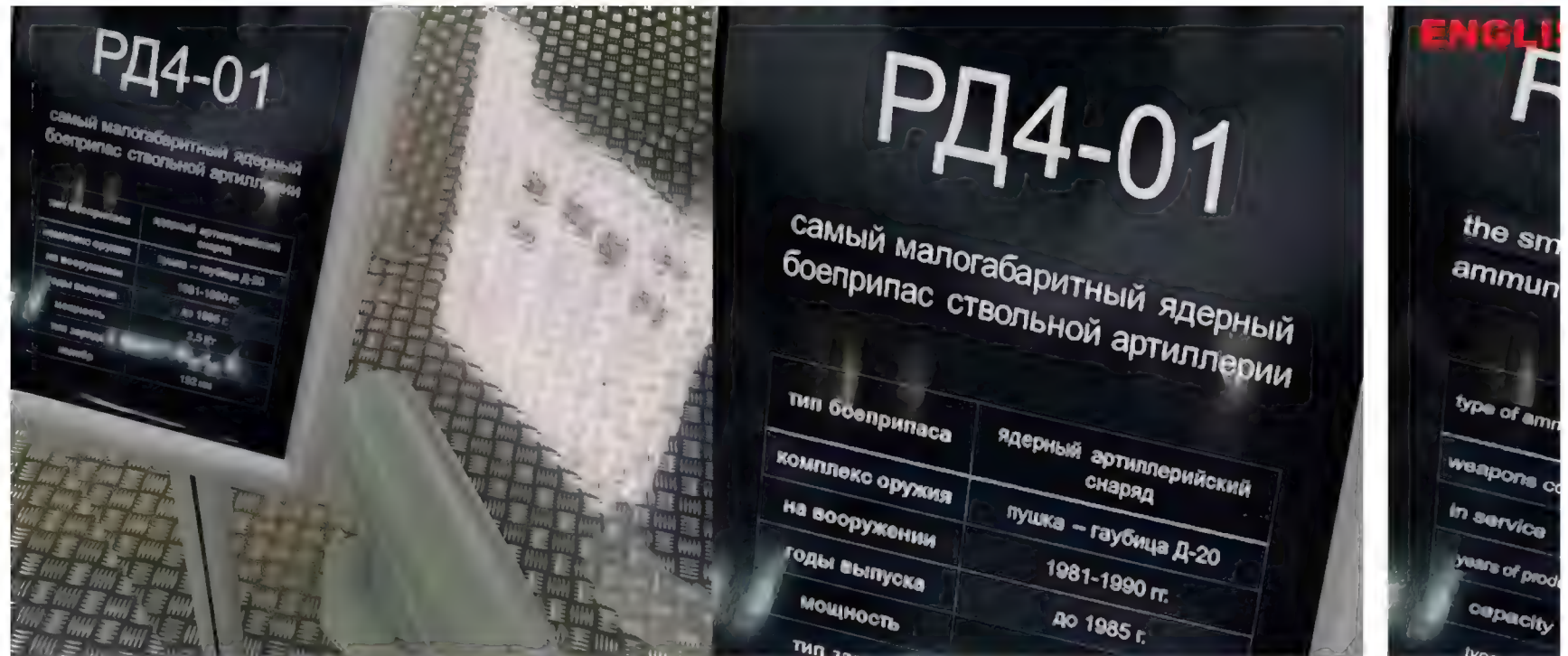
Yakutsk, weather forecast for August 18, up to 16 °C





ABOVE: Russian news aka propaganda site *infosmi* has published photos of Russian nuclear weapons in crates ready for use in the Ukraine, e.g. see "Tactical nuclear weapons of the Russian Federation will force the US and NATO to capitulate", <https://infosmi.net/politic/280327-takticheskoe-yadernoe-oruzhie-rf-zastavit-ssha-i-nato-kapitulirovat/> "As Voennoye delo reports , the risk of using nuclear weapons is only increasing, with Western experts James Ragland and Adam Lowther saying that the main danger lies in Russian tactical nuclear weapons. At the moment, according to experts, the number of such ammunition that Russia possesses ranges from three to six thousand units, while the North Atlantic Alliance does not have weapons of this type at all. In the current situation, according to analysts, the Russian side can use tactical nuclear weapons in such a way that the effect of destruction, as well as radioactive impact, is minimal, while the psychological aspect of such actions will reach a maximum. As a result, the US and NATO will be forced to capitulate to the threat of a full-scale nuclear conflict." (There is one BIG problem with this particular example of Russian "propaganda": it happens to be a *credible threat*, unlike Western books on nuclear weapons/war effects. Even bad propaganda can sometimes be useful kicking the self-deluded into sense, if they can be persuaded to face the truth, rather than the fairy tales from the even worse propaganda of disarmament activists and bigots on knockout blow and countervalue nuclear war. But the correct solution is *not the capitulation to Russia suggested in this article*, but instead for NATO to begin once more to credibly deter Russia from its conventional warfare which risking escalating to tactical nuclear war, *when it runs out of conventional arms, due to the supply of Western arms to Ukraine to enable it to blow up Russian conventional weapons stockpiles*. NATO had tactical nuclear weapons for this very same purpose in the Cold War, including the W54 and later the W79, these designs still exist and these can be produced again in an emergency to serve the same useful purposes, of deterring both nuclear escalation in an invasion, and WWII. The fact is that the Western tactical nuclear warhead disarmers SIMPLY GOT IT WRONG.)









ABOVE: the world's smallest diameter nuclear weapon is the Russian Snezhinsk lab's 2.5-kiloton 53 kg ZBV3, a 17.4km range, 152.4 mm diameter, 774 mm long artillery shell, shown here with its museum plaque (it is also shown below with the world's biggest ever nuclear weapon - also, you guessed it, a Russian product, in the Snezhinsk nuclear weapons lab instructional museum of warhead design). *(For comparison, the smallest Western nuclear weapon, Theodore Taylor's 0.02 kt W54 or Davy Crockett, is 305 mm in diameter, 457 mm long and 26.5 kg. So the Russian ZBV3 is only half the diameter of the W54, but it is twice the mass and of course longer than the W54. There is also a great difference in yield, 0.02 kt for the W54 compared to 2.5 kt for the ZBV3.)* The ZBV3 research supervisor was Academician E. I. Zababakhin, the chief designer of nuclear weapons was Academician B. V. Litvinov, and the chief designers of the development of nuclear weapons were L. F. Klopov, O. N. Tikhane and V. A. Vernikovskiy. This design began in 1971 and was completed in 1981. Manufacture by mass-production began at the Trekhgornyy City Instrument Making Plant in 1981 and was completed in 1991. The special casing it is held in is designed to protect it during storage and transit to the battlefield. It was built to be fired from the widest possible range of Russian artillery: D-20 howitzer guns, ML-20 howitzer guns, 2C3 Akatsia self-propelled howitzers, 2A36 Giatsint-B guns (towed), 2C5 Giatsint-C self-propelled guns.

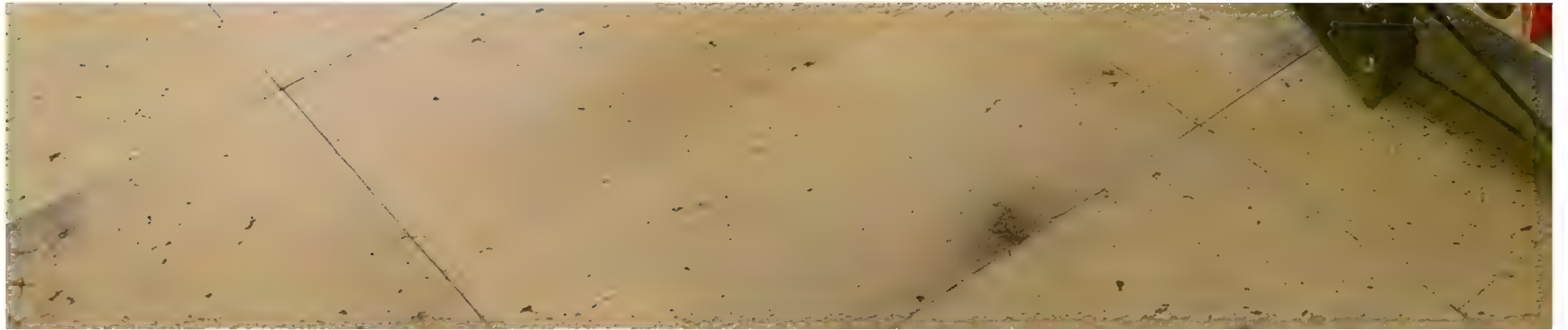
The descriptive plaque on the bomb in the photo above states (in Russian): "NUCLEAR PROJECTILE. 152 mm CALIBRE. FOR SELF-PROPELLED ARTILLERY INSTALLATION. **RFNC - VNIITF [note that VNIITF = the Snezhinsk nuclear weapons lab design, now part of Pocatom; they have some information on their website about their achievements in developing the best Russian nuclear warheads, stating that they developed the smallest ever nuclear weapon, namely the 152mm one photographed above, the cleanest ever nuclear weapon "in which 99.85% of the energy is obtained through the synthesis of nuclei of light elements", the lightest ever nuclear weapon, and the "the most economical in terms of the consumption of fissile materials", and nuclear warheads capable of withstanding 120C temperature, 750 atmospheres overpressure, and 12,000g's of acceleration on re-entry; maybe we should start buying their nuclear warheads if all this is true].**" Snezhinsk nuclear weapons lab also has an interesting webpage about their peaceful nuclear weapons tests here: <http://vniitf.ru/article/mirnie-vzrivi> "Of the 124 peaceful explosions carried out in the USSR, 80 nuclear charges developed at VNIITF were used in 75 cases. ... VNIITF began to carry out peaceful explosions of its charges from May 1968. ... All developments of NEDs for peaceful purposes were headed, carried out, supported and supervised at VNIITF by Academicians E.I. Zababakhin, E.N. Avrorin and B.V. Litvinov. ... If for peaceful camouflage explosions there were no special requirements for the "purity" of charges, then for ejection explosions (formation of dams, trenches) nuclear explosive devices with a minimum amount of radioactive fission fragments were needed. In these cases, thermonuclear devices are more suitable, in which the main energy release is due to fusion reactions. Such charges were also included in a series of peaceful NEDs developed at VNIITF, and were used to create a trench in the Pechora-Kolvinsky Canal section (Perm Region) - an integral part of the project developed in the 1970s to transfer the waters of the northern rivers to the Volga. The experiment to create this trench was called "Taiga". It was preceded by model explosions of low-power (0.2 kt) nuclear charges in wells at the Semipalatinsk test site (1968) "Telkem-1" and "Telkem-2", where the formation of an ejection funnel (a single explosion, T-1) and a short trench (a group explosion of three charges, T-2) was checked. The analysis of the results of these explosions was used in the design of the main experiment "Taiga". A year after this experiment, an improved "clean" charge was tested at the Semipalatinsk test site with a 5-

**fold reduced fragmentation activity compared to that used in the Taiga operation. ... In conclusion, we note that VNIITF is, in fact, the only organization in the world that develops specialized nuclear explosive devices for industrial applications."]**















Russian Nuclear Weapons Museum biggest and smallest devices compared







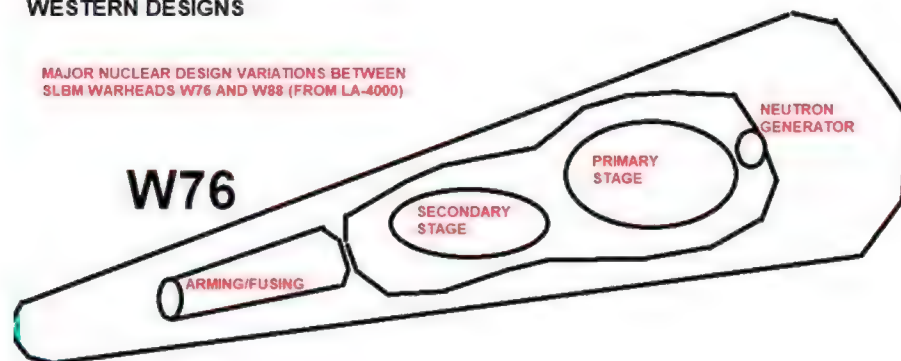






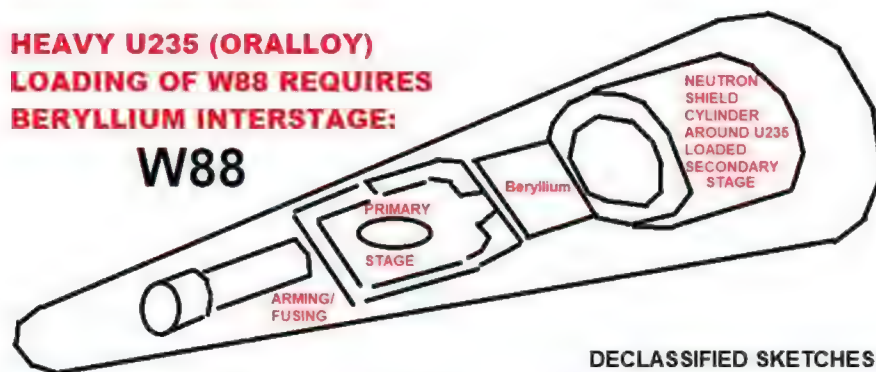
## WESTERN DESIGNS

MAJOR NUCLEAR DESIGN VARIATIONS BETWEEN  
SLBM WARHEADS W76 AND W88 (FROM LA-4000)

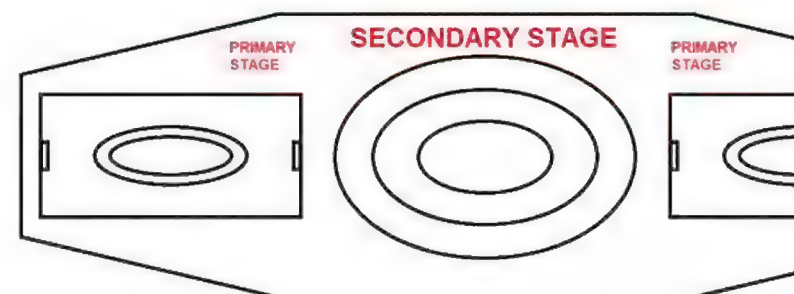
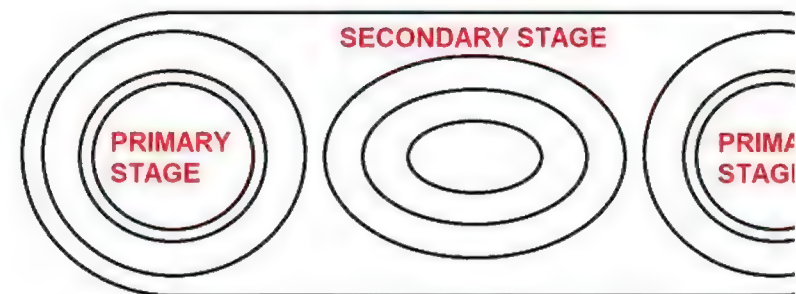


HEAVY U235 (ORALLOY)  
LOADING OF W88 REQUIRES  
BERYLLIUM INTERSTAGE:

W88



## RUSSIAN DESIGNS



DECLASSIFIED SKETCHES OF KEY DESIGN DIFFERENCES ONLY

U.S. and Russia are entangled in a dangerous war of words escalating to include deployment of further American military forces in Eastern Europe. What's more concerning: Russia has dedicated 2,000 tactical "nukes" to this aim and announced the deployment of 40 new strategic ballistic missiles capable of striking America's homeland. As its conventional military hardware grows incapacitated from physical decay and technological obsolescence, nuclear armaments become the mainstay of strategic Russian defense. Being Russia's only strategic alternative, their use becomes much more plausible. Plus, with the decline of the Russian Ru-

ABOVE: In 2015, S. Douglas Woodward's book *Is Russia Destined to Nuke the US* pointed out that Russia's only real military superiority is in tactical nuclear weapons, the most effective deterrent possible to allow it to invade Ukraine and

Europe, since the West has now no

way to counter it: "Europe protests the incursion but seems unwilling (and unable) to use military force to push Russia back from its designs on Ukraine and Crimea. ... Then there is the state of the Russian people. They suffer under economic sanctions imposed by Europe and the United States. Backed into a corner, is it suprising Russia rattles its sabre? However, Russia's only sabre - its one area of military superiority, is Russian tactical nuclear weapons [2,000] outnumbering NATOS tactical nukes 10 to 1 in the region. As Russia weakens in critical areas, several factors are converging which suggest Russia must act now ... The February 2014 agreement between Russia, Ukraine, France and Germany (the so-called Minsk Agreement) has failed ... 'During the era of political romanticism, the Soviet Union



pledged never to use nuclear weapons first,' Kiselyov told the audience of Vesti Nedeli, his current affairs show ... 'But Russia's current military doctrine does not - no more illusions'."

# *Carter Directive Modifies Strategy for a Nuclear War*



**1979: Russian Tsar**

By Michael Getler  
Washington Post Staff Writer

President Carter has signed a new directive that modifies the strategy the United States would use in fighting a nuclear war with the Soviet Union, according to high-ranking administration officials.

The new strategy involves placing less emphasis on all-out retaliation against Soviet cities in the event of a Russian attack. Instead, there would be greater emphasis on destroying Soviet military forces and both political and military command centers early in a conflict in hopes of convincing Moscow that it could not ultimately "win" a war.

Presidential directives on such matters are milestones in the 35-year history of the atomic age.

For much of the past two decades, the United States has relied on having enough nuclear might to smash all major Soviet cities and industries, even after absorbing a first strike by Moscow, so that the Soviets would be deterred from such an attack in the first place.

This was called by the appropriate name of MAD, for mutual assured destruction. It still is a major part of U.S. strategy.

But as the Soviet missile force grew larger than the U.S. force and as its accuracy improved, the Soviets not only could threaten U.S. cities but U.S. land-based missiles as well.

Furthermore, an appreciation grew among some specialists in this country that Soviet military doctrine did not necessarily accept the idea that a nuclear war could have no winners.

The timing would also set a target in Reagan—with seeking to show U.S. defense office claiming spending.

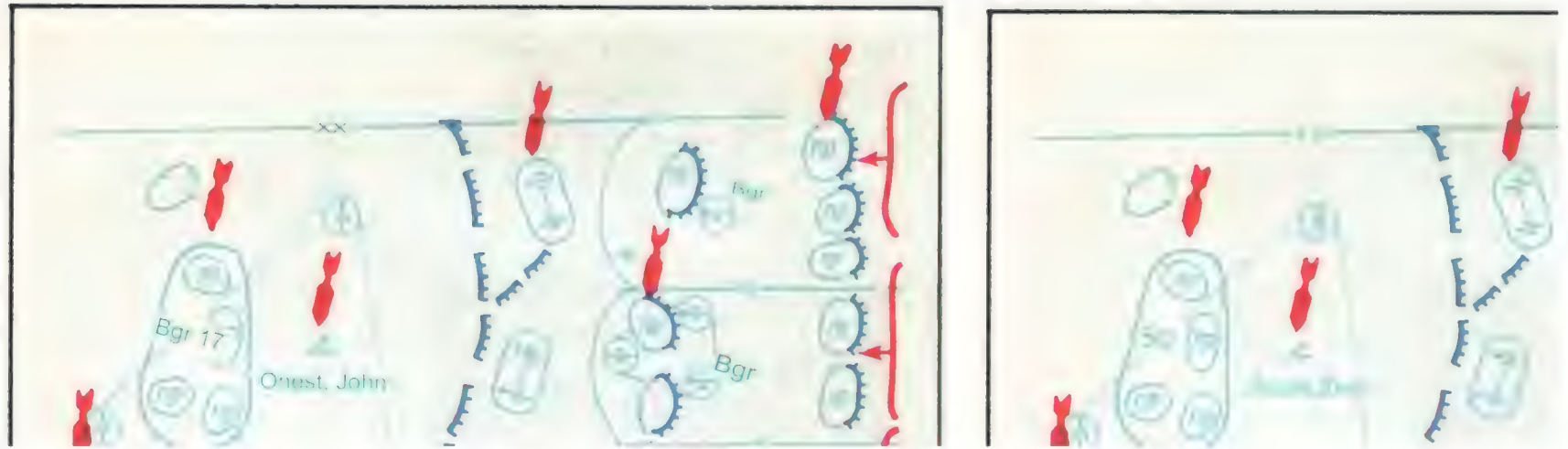
Nevertheless, officials claim interest in U.S. in how those the president predecessors.

His chief Zbigniew Brzezinski talking for so long for new strategic tactics to achieve a balance of power faces in the 1980s.

**Extract from Washington Post, 6 August 1980 (35th anniversary of Hiroshima)**

ABOVE: Russian plans for the tactical use of nuclear weapons (English translation left; original Russian on right), from our 20 September 2017 blog post [here](#), taken from restricted Russian manual *Nuclear Weapons - A Manual for Officers*, which we obtained from Ukraine and put on internet archive to show the threat. On pages 9-10 of his 1977 book *Surviving Doomsday*, Bruce





Sibley (who in the 1980s edited the UK CD magazine *protect and Survive Monthly*) pointed out: "During the 1960s, the original lead which America held in numbers of strategic missiles began to show signs of erosion ... Not only were the Russians developing new missiles and warhead techniques, but their whole armament programme began to expand at an alarming rate. At first, Soviet proclamations asserted that this was merely a 'catching up' with America and NATO, but since this expansion has continued aggressively ... it may not be

an exaggeration to hold the view that the Soviet Union has now overtaken NATO and American military might ... The matter of civil defence playing a major role in strategic warfare planning ... the 'ace in the hole' ... No country on earth has a civil defence programme as extensive as the Eastern Bloc. ... Unfortunately, the majority of Western politicians and some of their advisors seem quite oblivious to the *strategic* significance of Russia's preoccupation with a major civil defence programme. They either scorn or remain in ignorance of the facts. Some critics even charge that by its very existence, civil defence makes the prospect of nuclear war more thinkable, and therefore should not be developed. This is an essential part of their package for banning the bomb."

**ABOVE: Page 42 of Putin's latest 2014 Russian civil defense manual supporting the tactical use of nuclear weapons (English translation and original Russian text), from our 20 September 2017 blog post [here](#), full manual was put on internet archive** to show the threat. Again, civil defense when combined with offensive plans for nuclear weapons is an offensive problem; the opposite is true for purely defensive civil defense (which increases the nuclear threshold by enabling survival of accidental and limited nuclear strikes). On pages 5-6 of his 1977 book *Surviving Doomsday*, Bruce Sibley pointed out: "Meanwhile, the Soviet Union possesses the largest and most comprehensive war-survival programme in the world today. The Soviet leadership never tires of reiterating that victory is impossible unless every Soviet citizen has undergone intensive practical and moral-psychological civil defence training. ... The Soviet evacuation scheme intends to scatter 241 million citizens throughout the Russian countryside ... urban evacuation is the key to thwarting the 'estimated' killing power of nuclear missiles ... the Soviets have maintained vast stockpiles of grain, tinned food, fuel, water, medical supplies, clothing, spare parts and raw materials throughout the USSR ... The entire Moscow underground railway system has been equipped to give protection and life-support to over one million persons. Every Soviet citizen has been issued with a gas mask, that will filter out radioactive dust and chemical and biological aerosol agents ... the Russians may be committed to the downfall of Western ideology - by peaceful subversion or by open conflict." (*All of the arguments against this kind of civil defense are specious: Britain evacuated 1.5 million of vulnerable people from London 48 hours before declaring war in 1939, and the Luftwaffe didn't bomb the evacuees or "simply" retarget the dispersed population. Another fallacy is that dispersing millions of people into the countryside will make sanitation and food problems worse. The reality is that sanitation and food supply logistics break down in bombed cities far sooner than in the countryside, where people are nearer food sources! **The effect of fast-decaying fallout on crops is trivial.***)



Министерство Российской Федерации по делам гражданской  
обороны, чрезвычайным ситуациям и ликвидации  
последствий стихийных бедствий

Ministry of the Russian Federation for  
Emergencies and Elimination of  
Consequences of Natural Disasters

## ГРАЖДАНСКАЯ ОБОРОНА

## CIVIL DEFENSE

Учебник

Textbook

2014 г.

2014 г.

Защитными свойствами от действия ударной волны обладают также танки, БТР и БМП.

Tanks, armored personnel carriers also have protective properties from the action of the shock wave and BMP.

При невозможности использовать защитные свойства различных сооружений следует применять элементарные меры защиты. Так как для незащищенного человека наибольшую опасность представляет скоростной напор, то целесообразно до подхода ударной волны лечь на землю лицом вниз, головой или ногами в сторону взрыва. При этом площадь поперечного сечения уменьшается примерно в 10 раз, а воздействие скоростного напора будет минимальным.

If it is impossible to use the protective properties of various structures, elementary protective measures should be applied. Since the greatest danger for an unprotected person is the high-speed pressure, it is advisable to lie on the ground face down, head or feet in the direction of the explosion before the shock wave arrives. At the same time, the cross-sectional area is reduced by about 10 times, and the impact of the high-speed pressure will be minimal.

Воздействие скоростного напора снижают различные углубления (кюветы, ямы, воронки и др.) или невысокие прочные стенки, пни и другие предметы, за которыми можно укрыться.

The impact of high-speed pressure is reduced by various depressions (ditches, pits, funnels, etc.) or low strong walls, stumps which you can hide.

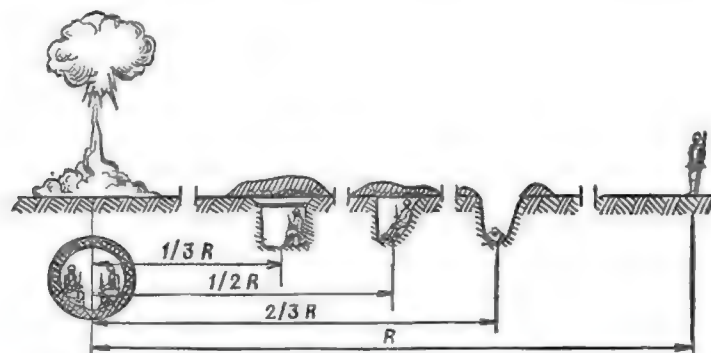


Рис. 1.8. Защитные свойства полевых фортификационных сооружений от воздушной ударной волны ядерного взрыва

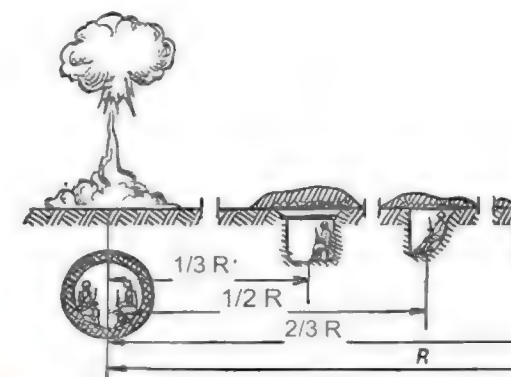


Figure 1.8. Protective properties of field fortification structures from the action of the air shock wave of a nuclear explosion

**TRANSLATION FROM PUTIN'S 2014 CD BOOK**



ABOVE: major designs of Russian warheads using two primary stages wired in parallel circuit (for explosive detonators on the implosive systems of each primary charge, and also parallel circuit for the later pulse of current to the neutron sources for each primary charge), to produce x-ray ablative linear implosion of a central thermonuclear charge:

**"Yuri Nikolaevich Babaev became one of the main creators of the world's largest detonated bomb ... In the future, the efforts of Yuri Nikolaevich Babaev focused on the fundamental improvement of thermonuclear charges, for which he developed the theory of "double approach". - [http://www.biblioatom.ru/founders/babaev\\_yuriy\\_nikolaevich/](http://www.biblioatom.ru/founders/babaev_yuriy_nikolaevich/)"**

These are an alternative to using plastic foam to diffuse x-rays in all directions to allow a *single* primary stage to compress a spherical secondary stage isotropically, without x-ray shadowing problems. Plastic foam reduces speed and efficiency of x-ray delivery (the recoil ablation force on the secondary,  $F = dp/dt$ , is reduced when plastic foam is used to diffuse x-rays, because the longer diffused pulse of x-rays which is delivered via plastic foam has an increased pulse duration,  $t$ ). For many purposes, therefore, two primary stages for linear implosion of a fusion charge, without needing any plastic foam, is just as an *efficient* approach as that used in single-primary Western devices.

ABOVE: error by DTRA regarding energy absorption by buildings. U.S. Government's *DTRA DISPATCH* magazine article "Building Effects on Airblast from Nuclear Detonations in Urban Terrain" falsely conflates the abrupt shock front with the length of the entire blast wave, claiming that since buildings are 2000 denser than blast waves: "the air will move 2000 times farther than the structure in the same time interval. Thus while the building is moving 1cm. the shock has moved more than 20m, and the energy is a small fraction of 1% the blast energy." The key error here is the statement that "the shock has moved 20 m". They meant the shock *front*, which isn't the same thing as the entire blast wave, the thickness of which is dependent on bomb yield, and is what moves drag-sensitive buildings with large window openings where the overpressure quickly equalises. So they are totally wrong. They are absurdly arguing that only 1/2000 of the dynamic pressure (kinetic energy per unit volume of air) of air presents a force upon buildings, or



## Defense Threat Reduction Information Analysis Center

## Building Effects on Airblast from Nuclear Detonations in Urban Terrain (continued)

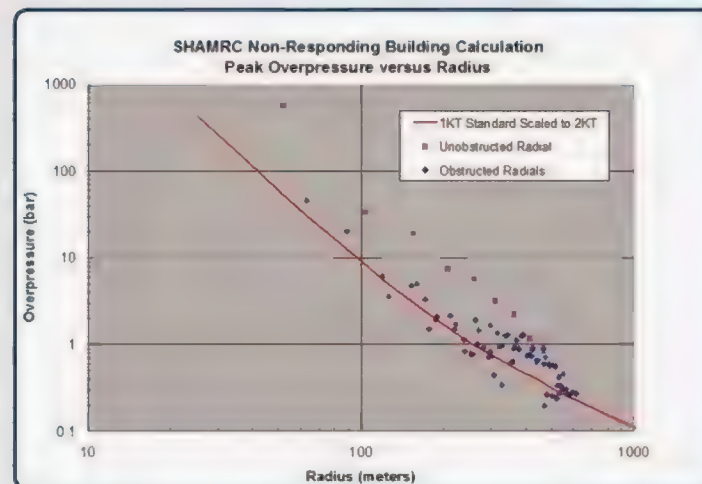


Figure 1. Urban pressure distribution along different radials (ARA, Inc.)

While the overpressure is drastically changed by the presence of buildings, the dynamic pressure is modified even greater in comparison to the ideal. The dynamic pressure is stagnated at each encounter with a building and is enhanced along streets and alleys. There are regions of nearly complete stagnation (no dynamic pressure) in regions that would have very high dynamic pressures over an ideal surface. The high dynamic pressures and dynamic impulses aligned with streets will move any loose objects such as cars, trucks, mailboxes, or sidewalk stands hundreds of feet. Cars will be piled on top of one another and block roads and access to buildings closer to the detonation point.

Many recent calculations have been criticized because they assume the buildings are nonresponding and perfectly rigid. The argument for this assumption is that the materials from which the structures are made have a density that is at least 2,000 times the density of air. This means that when a shock wave strikes a structure, the air will move 2,000 times farther than the structure in the same time interval. Thus while the building is moving 1 cm, the shock has moved more than 20 m, and the energy lost from the shock is a small fraction of 1% of the blast energy.

As an example of this behavior, an experiment was conducted at the Ernst Mach Institute in Freiburg, Germany, in which a model house was constructed of steel and exposed to a blast wave in a shock tube. Several shadowgraph pictures were taken as the shock wave engulfed the structure. Reflections from the walls and roof could be readily identified. A second model house was constructed from balsa wood using the same dimensions as the steel house and exposed to the same blast pressure.

When the shadowgraph pictures were compared, no distinction could be made between the steel and balsa wood shock reflections. The balsa wood model did not measurably move over the entire time of the shock interaction with the structure.

Another series of experiments<sup>1,2</sup>, in the United Kingdom, were conducted with a model city built from solid concrete buildings. Pressure gauges monitored the loading at many points on buildings throughout the city. A high-explosive charge was detonated at a height of burst such that the Mach stem would be higher than the buildings as it passed over the model city. The experiments were criticized for using nonresponding structures. Therefore, the city was carefully reconstructed of thin mirror glass on light metal frames with the gauges installed at the same locations as the concrete city, and the experiments were repeated.

**U.S. Government's DTRA DISPATCH magazine, "Building Effects on Airblast from Nuclear Detonations in Urban Terrain" falsely conflates the abrupt shock front with the length of the entire blast wave, claiming that since buildings are 2000 denser than blast waves: "the air will move 2000 times farther than the structure in the same time interval. Thus while the building is moving 1cm. the shock has moved more than 20m, and the energy is a small fraction of 1% the blast energy."**

**They meant the shock FRONT, which isn't the same thing as the entire blast wave, which is what moves buildings. So they are totally wrong.**

**Building density and the distance the shock FRONT has moved past has no relevance to thickness the layer of air BEHIND the shock front, which is what is pushing the building, and this thickness increases with bomb yield!**

presumably upon ships sails (which are denser than air), or eardrums (again which are denser than air). The shoddy, imprecise form of their statement makes it hard to understand precisely what they are saying, but it seems to be that they are assuming falsely that the blast wave consists only of a shock front, which will move 20 m past the building (without moving it significantly) before the building has moved 1 cm, but the density of the building and the location of the shock *front* relative to the building is *IRRELEVANT* while the mass of air *BEHIND* the shock front is delivering energy to the building, as proved by the absence from the relevant equations of both building density and shock front location after it has passed, but winds are still blowing. It's not the shock front that causes the building to oscillate, but the wind pressure behind the shock front. The building density, and the distance the shock *FRONT* moves beyond the building, have no relevance to thickness the layer of air *BEHIND* the shock front, which is what is pushing the building, and this thickness increases with bomb yield! (However, most of the push to the building occurs due to the highest dynamic pressure, i.e. the air just *behind* the discontinuity or "shock front".) As a result, the actual energy absorption by a building is more than 100 times greater than DTRA's ratio of densities claims. Small-scale models of buildings, whether absolutely rigid or made from glass mirrors don't in any way, shape or form model the energy captured in oscillations by thousands of tons of reinforced concrete of real buildings.

The wind (dynamic) pressure induced motion effects which have *nothing to do with the relative density of the shock front compared to the building*. The amount of energy picked up from either the wind pressure of normal breezes or the blast wave of a nuclear explosion, by a building in oscillatory energy is the time-integrated form of Newtonian equation  $E = F.x$ , where force  $F = P.A$ , where  $P$  is dynamic pressure and  $A$  is area, and  $x$  is the amount of displacement induced. There's no density of the building in these equations, and no dependence on the shock front, but rather the integrated dynamic pressure over the entire duration of the blast at the location of interest (if the building delays the passage of the shock front instead of letting it pass freely through windows etc, then there's an additional term for the time-integrated overpressure contribution). As dynamic pressure is removed by the building - not by the shock front but by the air behind it, lasting seconds in higher yield detonations - the overpressure also falls as the blast restores itself to the Rankine-Hugoniot conditions (overpressure energy is transformed into dynamic pressure energy, thus weakening overpressure as well as dynamic pressure). *If DTRA were correct that only the front part (shock front) of a blast wave is relevant to delivery of energy and delivers only 1/2000 of the energy of the blast, then by analogy our eardrums and ship sails would be similarly so inefficient at picking up energy from the dynamic pressure of sound and the wind, respectively, that they couldn't work!* Notice that their computer codes in 2013 falsely EXCLUDED any absorption of energy by the blast in oscillating thousands of tons of reinforced concrete, causing damage (much larger, huge amounts of energy are required to actually destroy reinforced concrete by permanent deformation; the springy oscillations of a building in a gale or blast wave take up far less energy than actual destruction requires), contrary to what John von Neumann pointed out (that buildings are NOT rigid but absorb energy from the blast, decreasing the blast parameters like pressures and impulses as the blast propagates through a city, unlike desert or ocean in unobstructed terrain nuclear tests!) in the 1950 *Effects of Atomic Weapons* (removed by Glasstone from future editions, just as he removed the civil defence chapter from the 1977 edition!).

*ABOVE:* Appendix A of Glasstone's 1950 *Effects of Atomic Weapons* gives a specific calculated example that allows the absorption of blast energy by oscillating modern concrete buildings to be calculated: a reinforced concrete building of 952 metric tons, 75x75ft, 38 ft high (thus horizontal area of 265 square metres), resisting force 4 psi, is subjected to a peak overpressure and dynamic pressure loading of 32 psi (242,000 Pascals) decaying to zero in 0.32 second. Calculated peak deflection of middle of the building was 0.88 foot or 0.27 m (the top would be deflected twice this amount). Reinforced concrete is relatively ductile, but any cracking absorbs even more energy than the simple calculation of the kinetic energy of blast-induced oscillation. So the blast wave energy absorbed from the simple physics law  $E$





# The Effects of Atomic Weapons

PREPARED FOR AND IN COOPERATION WITH THE U. S. DEPARTMENT OF  
DEFENSE AND THE U. S. ATOMIC ENERGY COMMISSION

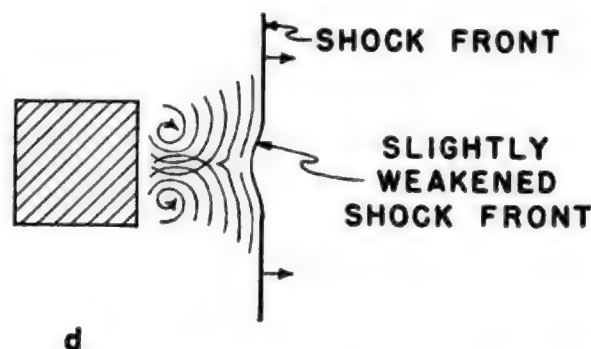
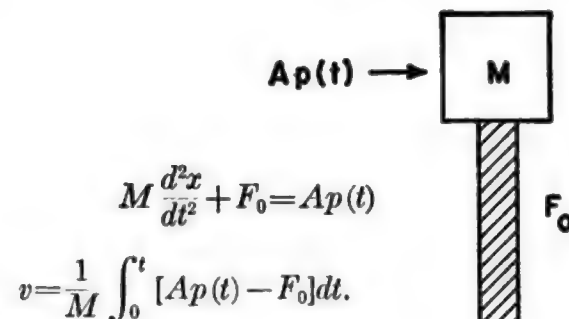


Figure 5.3. Behavior of blast wave upon striking cubical structure: (a) before striking the structure; (b) soon after striking the structure; (c) soon after passing the structure; (d) wave completely past the structure.

## APPENDIX A<sup>1</sup>

### AN APPROXIMATE METHOD OF COMPUTING THE DEFORMATION OF A STRUCTURE BY A BLAST WAVE



## GENERAL CONSIDERATIONS

3.20 In the preceding paragraphs, the discussion of the air blast from an atomic bomb exploded in the air. In this section consideration will be given to the effect of the burst of the bomb on the area of blast damage. This is an extremely complex and can be solved only in an approximate manner. This is so for two reasons: first, the behavior of a shock wave incident on a rigid object has never been obtained for all angles. As a result, the solution of the basic problem of shock reflection is derived by a combination of theory and experiment. This is, however, not readily adapted to yielding a better than an average sense in a more complete description of the target, not on the odd shape, but they have the additional complication of being rigid. This means that they do not reflect the wave, but they also absorb energy from it at the point of impact.

3.21 The removal of energy from the blast wave increases the shock pressure at any given distance from the detonation to a value somewhat below that which would be obtained in the absence of dissipative objects, such as buildings.

<sup>1</sup> This section is based on work by J. von Neumann and F. Reinhold, Los Alamos Laboratory.

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SI

of such dissipation or diffraction makes it necessary to consider what higher values of the pressure than would be obtained in the absence of a desired effect if there were only one structural rigid plane.

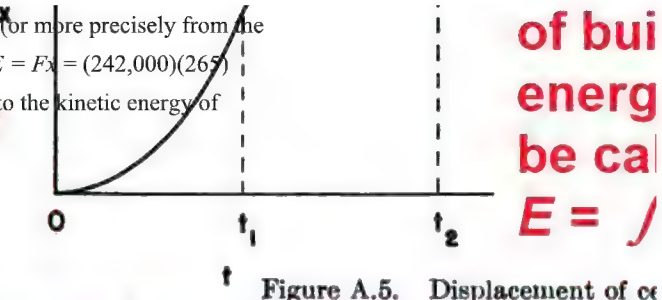


Glass  
Appel  
calcul

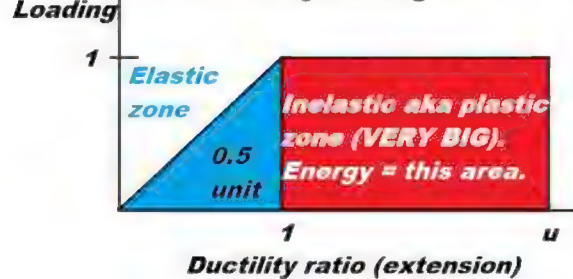
$= Fx = PAx$  where  $P$  is pressure loading,  $A$  is exposed area of building being loaded, and  $x$  is the displacement (or more precisely from the initial form) of the mass. If this mass is supported on plastic springs equivalent to single-story structure about  $E = Fx = (242,000)(267) (0.27) = 17,000,000$  Joules. This energy is removed from the blast wave by being transferred from the blast into the kinetic energy of oscillating the building! Hard fact!

**Glasstone's 1950 Effects of Atomic Weapons explained the basis of blast attenuation clearly.**

*Appendix A then gives a specific calculated example: a reinforced concrete building of 75x75ft, 38 ft high, resisting force 4psi, subjected to a peak overpressure and dynamic 32psi decaying to zero in 0.32 second. Calculated peak deflection of middle of the buildi*



**EM-1: ratio of energy to flatten vs. oscillate modern city buildings**



The resisting force of 4 psi used in the 1950 Glasstone book can be updated with the following static yield resistances for various modern city buildings using Table 15.6 on page 525 of the 1996 Northrop Handbook of Nuclear Weapon Effects: Calculational Tools Abstracted from EM-1: 3.0 psi and 0.3 second natural period of oscillation for 3-8 story reinforced concrete buildings (type 15.2.2), 1.25 psi and 0.3 second for brick houses (type 15.2.3), 0.5 psi and 0.25 second for wooden houses (type 15.2.5), or 2.0 psi and 0.6 second for 3-10 story steel-frame office buildings (type 15.2.10). The "nominal" ductility ratios (the ratios of displacement required for collapse/severe damage to the maximum elastic response before plastic response begins) for these four types of buildings are given by Northrop as 7.5, 4, 7.5 and 10, respectively. The maximum amount of energy absorbed in destroying the buildings is simply the area under the curve of loading versus displacement before collapse. Since this relative area is 0.5 unit for the triangle shaped slope up to a ductility ratio of 1, and is roughly a constant height rectangle for the plastic zone from a ductility ratio of 1 up to the failure limit (severe damage/collapse of building), the ratio of total energy absorbed by a building in its destruction, to the maximum energy that can be absorbed in purely elastic oscillations by a buildings (up to ductility ratio of 1 unit) is simply  $[0.5 + (7.5 - 1)]/0.5$ ,  $[0.5 + (4 - 1)]/0.5$ ,  $[0.5 + (7.5 - 1)]/0.5$ , and  $[0.5 + (10 - 1)]/0.5$ , or 14, 7, 14, and 19, respectively, for those four building types. It is to be noticed that the greatest amounts of plastic range energy absorption are for the most predominant two kinds of modern city centre buildings, namely reinforced concrete and steel frame multistory buildings. These buildings, with up to 8 and 10 stories, respectively, in these calculations, also have a cumulative effect in shielding free-field thermal and nuclear radiations.

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The Effects of Atomic Weapons, 1950, on page 57 has a section written by John von Neumann and Fredrick Reines of Los Alamos (it is attributed to them in a footnote) stating clearly: "the structures ... have the additional complicating property of not being rigid. This means

that they do not merely deflect the shock wave, but they also absorb energy from it at each reflection. The removal of energy from the blast in this manner decreases the shock pressure at any given distance from the point of detonation to a value somewhat below that which it would have been in the absence of dissipative objects, such as buildings." Glasstone removed this from future (1957-77) editions, not because it is wrong (it isn't), but apparently because it debunks official nuclear lies used for strategic deterrence in the same way that gas and incendiary bombing effects was exaggerated in the 1930s to try to deter war!

**total  
blast  
energy**

$$E = 4\pi \int_0^R \left( \frac{1}{2} \rho u^2 \right) r^2 dr + 4\pi \int_0^R \frac{P}{\gamma - 1} r^2 dr$$

**KINETIC ENERGY**

**INTERNAL ENERGY**

**The two terms for the blast wave energy  
(dynamic pressure and overpressure)**

ABOVE: The two terms for blast wave energy. It's really very simple: the first term above is the kinetic energy contained in the dynamic (wind) pressure of the blast, while the second term represents the internal energy of the blast (manifested as heat and related static overpressure). So

the theoretical basis for the calculation of blast energy absorption by a city is not rocket science, and it's not based on speculations or guesswork. **And this is not "new" either, since Brode's 1954 equations for calculating blast wave's with a computer include energy balance**, and you can with modern computers easily incorporate the irreversible energy losses due to the blast wave successively oscillating, one after another, the buildings with which it interacts as it travels outward in a modern city. **William G. Penney gives the real basis for calculating the energy loss due to blast damage in Hiroshima and Nagasaki in his 1970 paper, which contains numerous detailed, precise calculations and measurements showing how the act of causing destruction to steel and concrete, in addition to the mere oscillations of buildings, reduced the energy content of the blast and thus the pressure fell more quickly with distance in those cities**, than measured in unobstructed desert or ocean during his nuclear testing programme. (In **1985 John Malik of Los Alamos simply ignored in his report, LA-8819, all Penney's hard won facts from Hiroshima and Nagasaki**, without going into details at all. Glasstone and Dolan reference Penney's 1970 paper, but simply ignore its findings on blast attenuation in Hiroshima and Nagasaki. So much for scientific progress! *Note also that Penney's 12 kt yield for Hiroshima is lower than the current estimate of 16 kt, implying even*

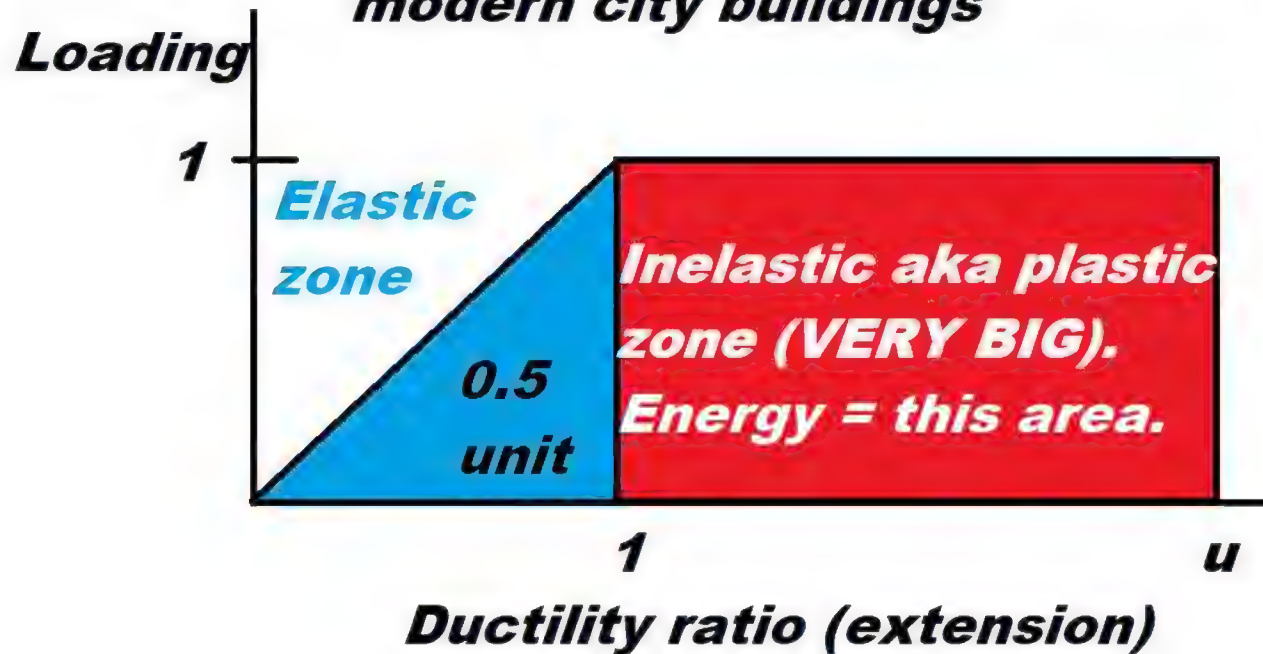


*more blast absorption in Hiroshima than Penney found, because the unattenuated free field pressures from 16 kt will be greater than those from 12 kt!)*

Now consider the energy absorption in the plastic region for reinforced concrete. The calculations of energy absorption in oscillating a building are for the small "elastic response" region of the pressure-displacement curve. But vast amounts of energy are absorbed beyond that elastic limit, and yet at pressures lower than required to make a reinforced concrete building collapse (*always ignored by ignorant shelter critics, as Lord Baker explained, for shelter design in his 1978 book which we reviewed in detail a few posts back*). There is a summary of the key building parameters America uses in calculating the effects of nuclear blast on buildings of various kinds in Table 15.6 on page 525 of Northrop's 1996 *Handbook of Nuclear Weapon Effects, Calculational Tools Abstracted from EM-1*: building 15.2.2 (3-8 story reinforced concrete, small window area) has a severe damage ductility ratio of 7.5, i.e. it fails and collapses (severe damage) when the displacement is 7.5 times the maximum elastic response. Put another way, the plastic limit for reinforced concrete is 7.5 times the elastic displacement limit. Northrop's figure 15.7 shows the extension versus applied pressure load. The energy absorbed in the elastic limit is a triangle terminating at a displacement of 1 ductility unit (units are extension/elastic limit extension), so it has an area of 0.5 units (energy absorption for oscillating the building, *see diagram below*). But the plastic response is not a triangle but a unit high rectangle which starts at one unit and extends to 7.5 units (severe damage/collapse), its area is thus  $7.5 - 1 = 6.5$  units, so it absorbs  $6.5/0.5 = 13$  times as much energy as that used to oscillate the building elastically! So reinforced concrete buildings can absorb 13 times more energy in being damaged, than they can absorb in oscillating elastically. **The ratio of total energy absorbed to flatten the buildings, to the maximum energy that can be absorbed elastic oscillate it, is  $(6.5 + 0.5)/0.5 = 14$ . Thus, the total energy absorption by a building can be 14 times that involved in merely oscillating it!**

*ABOVE*: model of a building having a blast, the simple engineering graph from EM-1 showing the ratio of energy needed to total a building to that which merely oscillates it. The axes depict loading force and displacement, respectively, so the areas under the curve beautifully correspond to energy absorbed, allowing us to calculate the total energy needed to flatten a city very easily (from a simple, standard physics formula, energy  $E = Fx$ ), in terms of multiples of the energy needed to just oscillate the buildings elastically. Northrop's data for other types of buildings are as follows: type 15.2.5 wood frame house has the same 7.5 ductility ratio for collapse, so it can absorb in plastic deformation 13 times the elastic oscillatory energy; type 15.2.3 brick house has a ductility ratio of 4 for severe damage, and a type 15.2.10 3-10 story steel-frame office building has a ductility ratio of 10 for severe damage. This is precisely Lord Baker's principle of the Morrison table shelter (for details, please see Lord Baker's 1978 book about the problems with explaining this to the bureaucratic nutters who don't understand the physics behind engineering, the brilliantly titled *Enterprise versus Bureaucracy*) where the *plastic deformation of steel is used to absorb many times more energy than it can absorb elastically*. In other words, it's the damage done (plastic deformation of reinforced concrete) that really absorbs vast amounts of blast energy, not the smaller energy absorption from elastic oscillations of a building! Northrop's table 15.6 shows that the reinforced concrete building, type 15.2.2, has a natural period of oscillation of about 0.3 second, and a static yield resistance of about 3 psi. Northrop's Figure 15.10 shows it has 50% probability of severe damage at 2.85 km from a 1 megaton surface burst on an ideal, unobstructed desert surface with no blast energy absorption by buildings intervening between that target and ground zero! For comparison, a similar 1 megaton surface burst in unobstructed desert is shown in Northrop's Figure 15.11 to have 50% probability of destroying a typical British brick house at 4.42 km ground range (50% severe damage probability), whereas Figure 15.18 gives a range of only 2.74 km for collapse of 3-10 story steel-frame buildings from a 1 megaton surface burst on unobstructed, open terrain.

# **EM-1: ratio of energy to flatten vs. oscillate modern city buildings**



*Total blast wave energy absorbed by city building, divided into the blast energy that can be absorbed to merely oscillate the elastic zone) a building = blue plus red areas, divided blue area*

$$= [0.5 + (u - 1)] / ($$

$$= 1 + 2(u - 1)$$



THE NUCLEAR EXPLOSIVE YIELDS AT  
HIROSHIMA AND NAGASAKI

BY LORD PENNEY, F.R.S.,  
*Imperial College*

D. E. J. SAMUELS AND G. C. SCORGIE  
*United Kingdom Atomic Energy Authority*

(Received 13 October 1969)

[Plates 2 to 9]

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The nuclear explosive yields at Hiroshima and Nagasaki have been calculated from measurements of the damage caused to some objects whose dynamical responses were simple enough to permit analysis. Examples include bent or snapped poles, squashed empty drums and cans, overturned memorial stones, some safe doors and the tops of office cabinets pushed in by the blast. The Hiroshima explosion was  $12 \pm 1$  kilotons and the Nagasaki explosion was  $22 \pm 2$  kilotons.



## RESEARCH MEMORANDUM

## NUMERICAL SOLUTIONS OF SPHERICAL BLAST WAVES

H. L. Brode

RM-1363-AEC

29 September 1954

[https://www.rand.org/pubs/research\\_memoranda/RM1363.html](https://www.rand.org/pubs/research_memoranda/RM1363.html)

to a mesh number ( $u$ ). The radial distance  $r(r_0, t)$ , is in reduced dimensionless units ( $r_0$  being Lagrangean distance that

$$\lambda = r/\epsilon \text{ and } \lambda_0 = r_0/\epsilon,$$

where  $\epsilon$  is a length expressing the energy and ambient pressure

$$\epsilon^3 = \frac{E_{\text{tot}}}{P_0} = \frac{4\pi}{P_0} \int_0^R \rho(E_{\text{int}} + \frac{u^2}{2}) r^2 dr$$

$E_{\text{tot}}$  is the total blast energy and  $E_{\text{int}}$  is the specific internal energy. The subtracted term represents the pre-shock internal energy of the shock, and  $R$  is the shock radius. Time ( $t$ ) is defined

In fact DTRA and its predecessors back to General Groves of the Manhattan project have been covering-up the facts determined at Hiroshima in order to foster a delusion that strategic nuclear bombing against cities can work, despite failing. Anyone can simply move people out of cities (as the UK did with kids in Operation Pied Piper, 1 Sept. '39) before declaring war, and then your entire pathetic "countervalue strategic" anti-city deterrent is flushed straight down the pan! This undermines credible nuclear deterrence, which requires tactical nuclear weapons to prevent the invasions that set off both world wars (Belgium '14, Poland '39). It Ukraine had that it wouldn't be in the situation it's now in. Nuclear disarmament didn't make it safe. DUH! (And no, Mr "Scientific American", Hitler did *not* send the luftwaffe to bomb the kids being evacuated from London on 1 September 1939!)

Professor Bridgman's Introduction to the *Physics of Nuclear Weapons Effects* can be used to demonstrate the exaggerations in Glasstone's *Effects of Nuclear Weapons* when Glasstone's free-field (unobstructed terrain) nuclear effects predictions from desert and ocean nuclear tests are improperly applied to concrete cities. Bridgman, for instance, considers a building with an exposed area of 163 square metres, a mass of 455 tons and natural frequency of 5 oscillations per second, and finds that a peak overpressure of 10 psi (69 kPa) and peak dynamic pressure of 2.2 psi (15 kPa) at 4.36 km ground range from a 1 Mt air burst detonated at 2.29 km altitude, with overpressure and dynamic pressure positive durations of 2.6 and 3.6 seconds, respectively, produces a peak deflection of 19 cm in the building about 0.6 second after shock arrival. **The peak deflection is computed from Bridgman's formula on p. 304.** This 19 cm computed maximum deflection allows us to estimate how much energy is permanently and irreversibly absorbed from the blast wave by a building (if damaged, additional energy is absorbed and is transformed into slow-moving - relative to the shock front velocity - debris which falls to



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The Circulation of this paper has been strictly limited. Mr Shatt  
It is issued for the personal use of .....

SECRET

Some Aspects of Shelter and Evacuation Plans to meet H-Bomb threat

WWII Morrison shelter co-inventor (with Lord Baker), Edward wrote this Secret 1954 H bomb survival report for Strath's civ

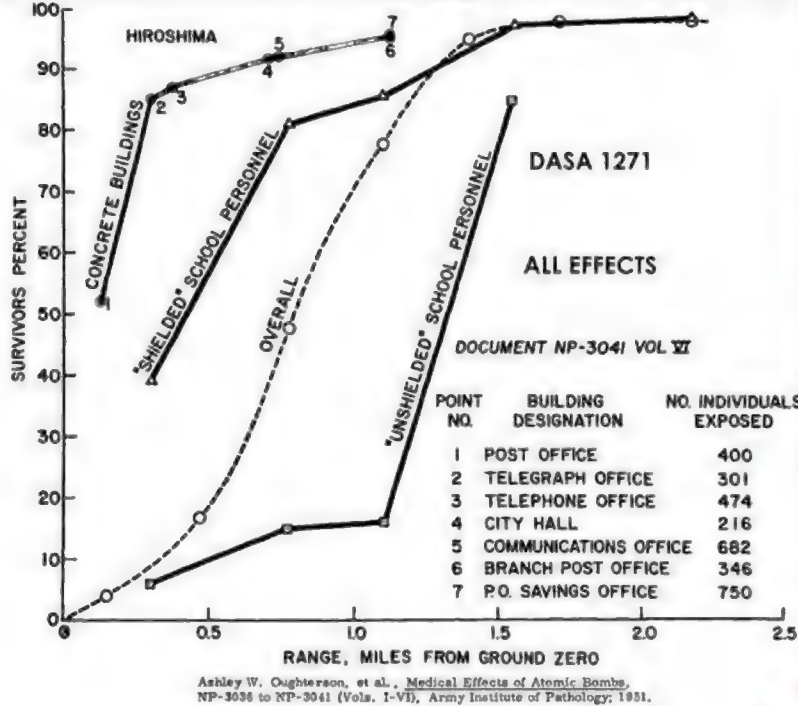
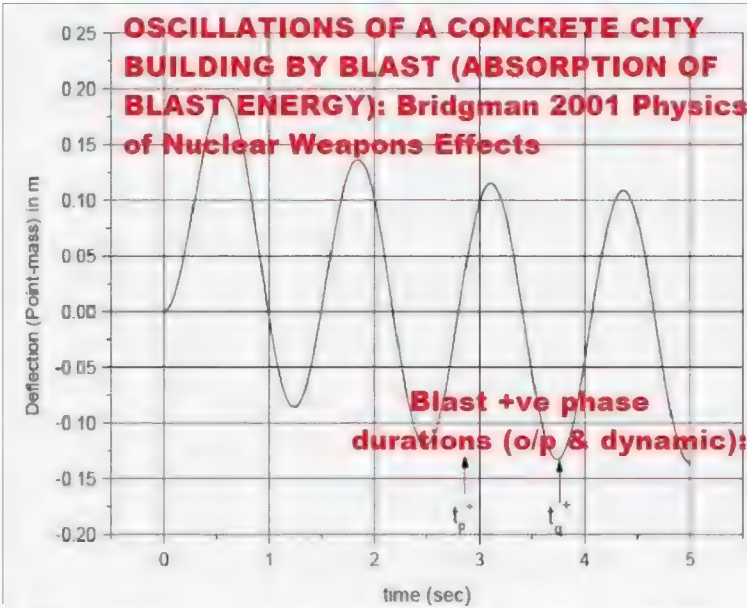


Table 5

Deaths from 1000N bombs after evacuation of 5 mile radi for London and 3 mile radius for other cities. Evacuee accommodated in surrounding annulus where they and the inhabitants are provided with shelter with a safety rat

20 Mt

City	Position of bomb		
	Central	2 miles from centre	In position to cause maximum damage
London	0	0	261,000
Birmingham	0	56,000	155,000
Glasgow	0	64,000	152,000
Liverpool	0	67,000	152,000
Manchester	0	62,000	151,000
Total	0	249,000	871,000



the ground and is quickly stopped after the blast has passed it) by:  $E = F \times D$  where F is force (the product of a constant area and a bomb causes no deaths at all. Clearly, however, the enemy will choose to drop his bombs where maximum casualties. On average, and without allowing for losses which would be bound to occur in the "reception annulus", the other cities. The average deaths from bombs in these worst

If the average pressure for the first 0.5 second is equal to 12 psi (83 kPa) then the average force on the building during this time is 13 million Newtons, and the energy absorbed is:  $E = F \times D = 13,000,000 \times 0.19 = 2.6 \text{ MJ}$ , which is removed from the blast wave in the form of oscillations of the building. Successive absorption by building after building rapidly attenuates the wave.

Although you could say the blast wave from a 50% blast nuclear megaton warhead (one that is 50% of the total energy) rapidly decreases as it dumps hot air behind it to form the fireball (Glasstone and Albritton's model of the fireball and the DELFIC mushroom cloud module shows that, to fit observed cloud parameters, the fireball must be 50-45% of the total energy behind the blast that powers the mushroom cloud rise and expansion, so 50-45% of the total energy is in the fireball, and the rest is in the blast wave after the negative phase fully develops). In addition, the blast energy in the Mach front intercepting buildings near the surface is small at any given distance from the point of detonation.

which causes damage that gets attenuated; furthermore the yield scaling issue in that the distance from the point of detonation to the building is increased. For example, in the example above, 10 psi peak overpressure (69 kPa in SI units) occurs at 2.6 km from a 1 megaton strategic bomb, but the 163 square metres of the building is only a small fraction, 1% of the blast hemisphere at that range, namely  $f = 163 / (2 \times \pi \times 2600^2) = 163 / 120,000,000 = 1.37 \times 10^{-6}$ . So if the blast still contained 5% of the total weapon yield at this stage (1/10 of the original blast yield), the total blast energy striking the building's surface area would be just  $(2.6 \times 10^{14}) \times 1.37 \times 10^{-6} \times 0.05 = 2.9 \times 10^8 \text{ Joules}$ , proving that the oscillations of the building removed 2.6 MJ of 290 MJ blast energy intercepted, nearly 1%, which is a similar fraction to Penney's finding in Hiroshima.

Figure 1: Blast Effects. A graph showing Mortality (Percent) on the Y-axis (0 to 100) versus Overpressure (psi) on the X-axis (0 to 100). The curve shows that mortality increases sharply with overpressure, reaching 100% at approximately 100 psi. The graph is labeled "BLAST EFFECTS" and "HIROSHIMA".

Figure 2: Prediction of Urban Casualties and the Medical Load from a Bomb. A graph showing Mortality (Percent) on the Y-axis (0 to 100) versus Overpressure (psi) on the X-axis (0 to 100). The curve shows that mortality increases sharply with overpressure, reaching 100% at approximately 100 psi. The graph is labeled "PREDICTION OF URBAN CASUALTIES AND THE MEDICAL LOAD FROM A BOMB".

You get additional, greater, energy loss due to damage done to buildings close to the fireball. For  $n$  such buildings in a radial line, the cumulative removal of blast energy fraction is:  $\exp(-2.6n/290)$ , which is *greater* for the larger blast damage distances in built up areas predicted for effects of higher yields! So increasing the yield increases the shielding for any given free-field pressure (the distance of which scales up with yield)!

**Even with wooden 1-storey houses predominating in Hiroshima, Lord Penney who took away the overpressure debris (crushed petrol cans, etc) for analysis in England in 1945 found the blast energy at Hiroshima decreased exponentially due to blast attenuation caused by damage done, by comparing his results to the free-field Maralinga desert values for British nuclear tests without a precursor.** This was all ignored by Uncle Sam (Glasstone)!

We have already given in many posts extensive evidence proving that concrete buildings in Hiroshima and modern cities absorb thermal, nuclear and blast effects in a way totally ignored by Glasstone's unobstructed desert analysis. Strategic nuclear deterrence is thus bunk, if based on nuclear test effects data from unobstructed desert or open ocean. We need tactical nuclear deterrence to stop invasions and the use of force, not an incredible threat of bombs on cities, which is analogous to the gas and incendiary bombing exaggerations of the 1920s and 1930s which failed to deter WWII. The exaggerations were made by both lying disarmers (to scare people into disarmament) and by lying proponents of aerial bombing in war (to scare enemies into surrender). The resulting pseudo "consensus of expert opinion" from both groups had tragic consequences. Strategic bombing, megatons of ~100 kg high explosive on Germany, equivalent to a large nuclear attack however you scale the megatonnage (by the 2/3 power of blast yield for peak overpressure over unobstructed terrain, or by an even

function of a constant area and a bomb causes no deaths at all. Clearly, however, the enemy will choose to drop his bombs where maximum casualties. On average, and without allowing for losses which would be bound to occur in the "reception annulus", the other cities. The average deaths from bombs in these worst

**100 megaton attack (five 20 megaton H-bombs on UK cities) would cause 100,000 deaths if cities were evacuated and people sheltered slightly or 5 miles from Trafalgar Square in London, or 3 miles from other cities. Russians deliberately tried to target these evacuated people in protection of 90, then you would get under a quarter of a million deaths. Bombs were detonated 2 miles from centre of cities, or under 1 mile from key cities, e.g. evacuation from London to Devon and Cornwall prevents this re-targeting. Evacuation deters bomb**

**Naturally, if the evacuation was like that of kids and mothers and fathers (anyone who could not take to shelter readily) on 1 September 1939, the evacuation from London to Devon and Cornwall prevents this re-targeting. Evacuation deters bomb**

weaker function of yield for initial nuclear radiation), also failed to produce military results when civilians were bombed. **The two low yield nuclear weapons dropped over mostly wooden houses in Japan did not produce the results publically claimed (for propaganda) for modern concrete cities.** We've been blogging this for years, ignored by the loons who prefer anti-nuclear lies about strategic nuclear deterrence!

So to correct Glasstone for urban areas:

- (1). Simply use **Lord Penney's exponential attenuation formula from Hiroshima to reduce peak overpressures in cities:  $\exp(-R/3.25)$  for R being radial distance through a city in kilometres.** This reduces peak overpressure by 50% at 2.2 km. (Obviously precise effects depend on details, but this is a "baseline" for minimal blast attenuation, in cities with predominantly wood frame buildings.)
- (2). Simply use **George R. Stanbury's formula for predicting the thermal flash shadowing, by calculating the number of exposed upper floors that can geometrically "see" the fireball as a function of range, so that the number of computed flash burns correspond to the number of windows that can see the fireball (e.g. for 50 ft wide streets, 3 miles from a 1 megaton surface burst, only the highest floor can "see" the fireball since the angle from the top of the fireball to building top artificial skyline is 13.5 degrees; if the buildings are on average 10 floors high, the percentage burns and fire risk is therefore 1/10 for one side of a building with 4 sides, i.e. 1/40 which is smaller than the 1/10 assumed by some simplistic propaganda; but you then get into the issue of the size of the windows and whether the people inside are protected by shadows from walls or furnishings or internal office cubicle partitions or even other people in between the target and the fireball in the office, all of which reduce the simplistic "theoretical" estimates of the number of people burned,** instead of assuming that no buildings or screening exists at all as in anti-nuclear propaganda for so-called "arms control" (war via appeasement/disarmament as in the 1930s). Stanbury points out there, and in his August 1962 Restricted UK Home Office Scientific Advisory branch *Fission Fragments* article on *Fires from nuclear weapons*, that to produce firestorms in Germany - the allies tried hard to achieve this in 1943 to end the war (and firestorms produce the associated soot clouds for climatic "nuclear winter" effects hype) you needed 50% of buildings to be initially ignited, which was only possible in the (now burned and gone) medieval wooden areas of Hamburg and **Hiroshima (due to blast-overturnd charcoal braziers in wooden houses in Japan, not the thermal flash which was obstructed by rooms and other buildings).** Stanbury's studies of the thermal flash shielding in Liverpool and Birmingham showed that the thermal radiation is shielded to such an extent you simply can't get to within an order of magnitude of that 50% ignition incidence needed for a Hamburg style intense firestorm (or, therefore, nuclear winter due to Hamburg type firestorm soot clouds penetrating the stratosphere)!

The effect of scattered thermal radiation diffusing into shadows was insignificant at Hiroshima and Nagasaki, where burns from thermal radiation were only received in an unobstructed radial line from the fireball, so that any shielding provided virtually complete protection from thermal flash. The 110 Castle-3 shot at Bikini Atoll in 1954 was fired during a moderate rainstorm to obtain data on the reduction of blast and thermal effects by rainfall. There are no films that show the fireball because the water content of the air absorbed the thermal and visible transmission. Heavy rain or fog absorbs the thermal radiation locally around the fireball, rather than creating a large amount of dangerously wide-angle scattered radiation at great distances. Northrop's 1996 *Handbook of Nuclear Weapon Effects: Calculational Tools Abstracted from EM-1*, gives data for Pacific test conditions in Figure 6.39 on page 248, on the effect of scattered thermal radiation from a burst at 1 km altitude, at various distances and for different fields of view:





**1953 Nevada 15 kiloton nuclear test Grable at 524 ft burst altitude, sm  
protection effects report:**

**Elmer H. Engquist and Charles W. Forsthoff, *Protection Afforded by Op  
Screens Against Thermal Radiation*, Operation Upshot-Knothole, projec  
test report WT-768, DTIC report ADA995215:**

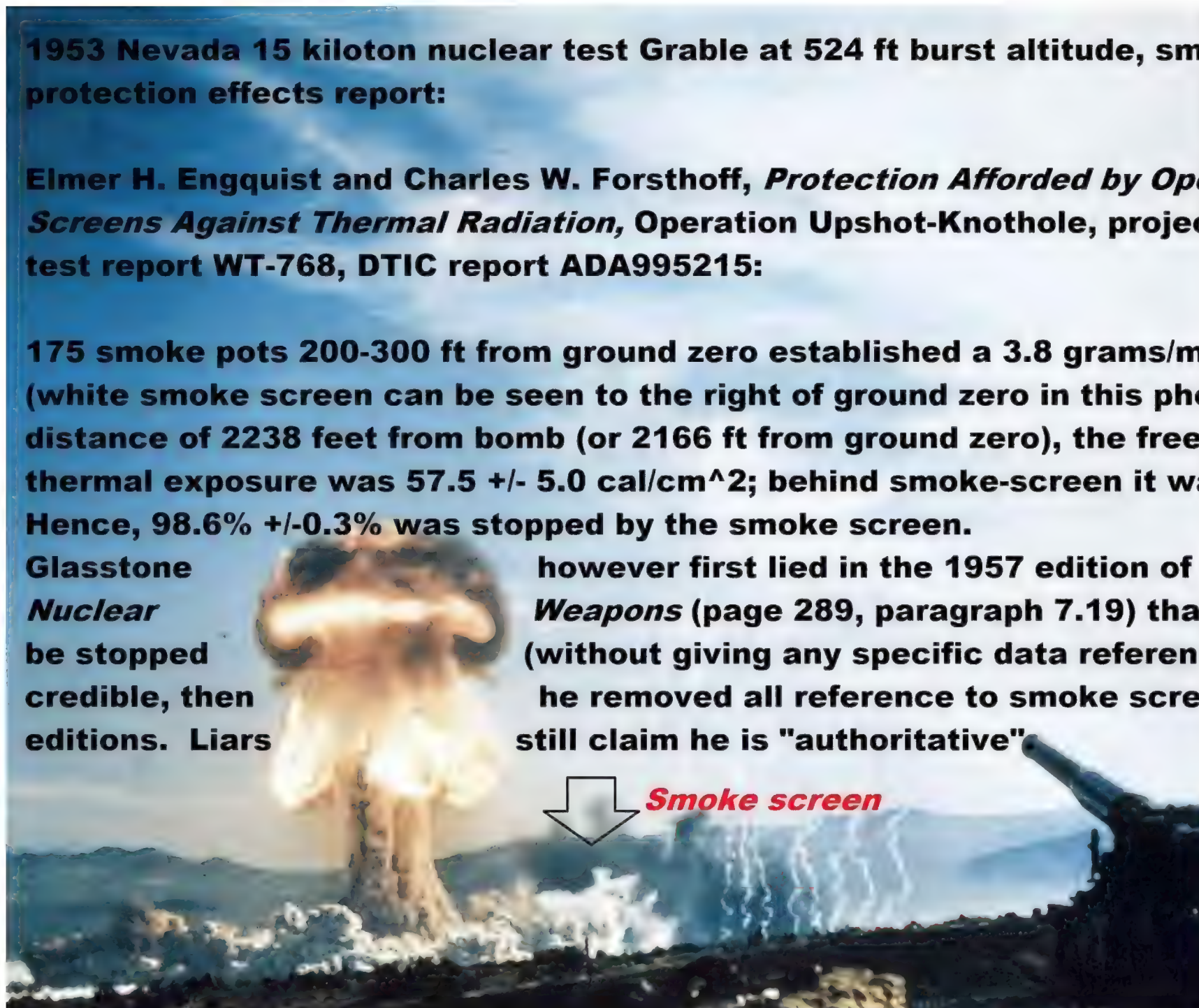
**175 smoke pots 200-300 ft from ground zero established a 3.8 grams/m  
(white smoke screen can be seen to the right of ground zero in this pho  
distance of 2238 feet from bomb (or 2166 ft from ground zero), the free  
thermal exposure was  $57.5 \pm 5.0 \text{ cal/cm}^2$ ; behind smoke-screen it wa  
Hence,  $98.6\% \pm 0.3\%$  was stopped by the smoke screen.**

**Glasstone  
*Nuclear*  
be stopped  
credible, then  
editions. Liars**

**however first lied in the 1957 edition of  
*Weapons* (page 289, paragraph 7.19) tha  
(without giving any specific data referenc  
he removed all reference to smoke scre  
still claim he is "authoritative"**



***Smoke screen***





angular distribution of scattering is not extreme (most of the scattering comes from air relatively near the fireball): the total (direct plus scattered) is 70% for a 40 degrees field of view (only 30% of the thermal radiation comes from angles exceeding 40 degrees from the radial line to the burst). Only 6% of the total thermal radiation at 10 km comes from angles beyond 90 degrees (i.e. 94% comes from the hemisphere around a target facing the burst).

Northrop's 1996 *Handbook of Nuclear Weapon Effects: Calculational Tools Abstracted from EM-1*, also gives graphs of the thermal radiation spectrum, showing differences with burst altitude and yield. Figure 6.19 shows that a 1 kt surface burst gives a thermal spectrum which peaks at 1.1 micron (Planck radiating temperature = 2000 K), compared to 0.4 micron (Planck radiating temperature = 5000 K) for 1 kt air bursts at 1-30 km altitude. Figure 6.21 shows there is much less difference between the spectra for surface and air bursts for 1 megaton yield: 0.70 micron peak in the thermal spectrum (Planck radiating temperature = 3800 K) for a megaton surface burst, compared with 0.52 microns (Planck radiating temperature = 4500 K) for a 30 km altitude megaton burst.

Northrop's 1996 *Handbook of Nuclear Weapon Effects: Calculational Tools Abstracted from EM-1*, in Figure 16.10 uses hydrodynamic calculations to prove that the maximum fire wind velocity in a firestorm is only a weak function of the fire intensity, for example a fire with a radius of 10 km will create a maximum fire wind velocity of 17 m/s for a fire intensity of 25 kW/m<sup>2</sup>, but this only increases to 36 m/s if the fire intensity is increased to 240 kW/m<sup>2</sup>.

Remember also that nuclear test evidence shows that the risk of clothing or other items burning is less for real levels of office humidity than for target materials left to dry out in the Nevada at the lower humidity of Nevada nuclear tests like Encore; clothing **shields thermal radiation and increases burns energy requirements contrary to Glasstone**.

Northrop's 1996 *Handbook of Nuclear Weapon Effects: Calculational Tools Abstracted from EM-1*, Table 14.5 on page 501 also points out that while people standing nude 2 metres behind glass windows watching the nuclear blast approach them will receive a 50% median dose of 3 glass fragment abdominal wall penetrations at a peak overpressure of 7 psi, it takes 15 psi if they are wearing clothing! If they duck and cover, they will can avoid the directional flying glass (and the thermal burns) completely. What Northrop doesn't tell you is that in a built up city, the dynamic pressure needed to energise those glass fragments to lethal velocities don't exist 2 metres behind glass windows in general; only behind those windows facing the fireball with an unobstructed view. Other windows on all all sides of the building will certainly break if the overpressure is high enough, but the blast wind (dynamic pressure) is directional and so the windows will not be blasted inwards with the same speed (at lower pressures they can even fail in the negative phase and be sucked outwards, with no hazard whatsoever to occupants!). Northrop (1996) in chapter 14 on personnel casualties gives very high mortality rates based on unprotected head impacts, particularly for standing personnel, e.g. 5 psi for 50% mortality for people standing in buildings swept through by blast

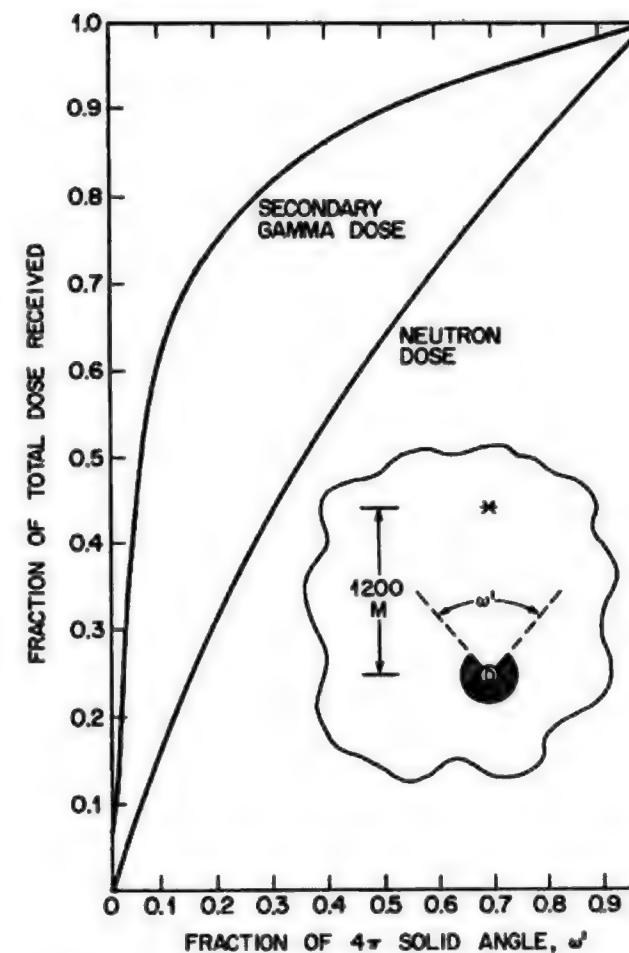
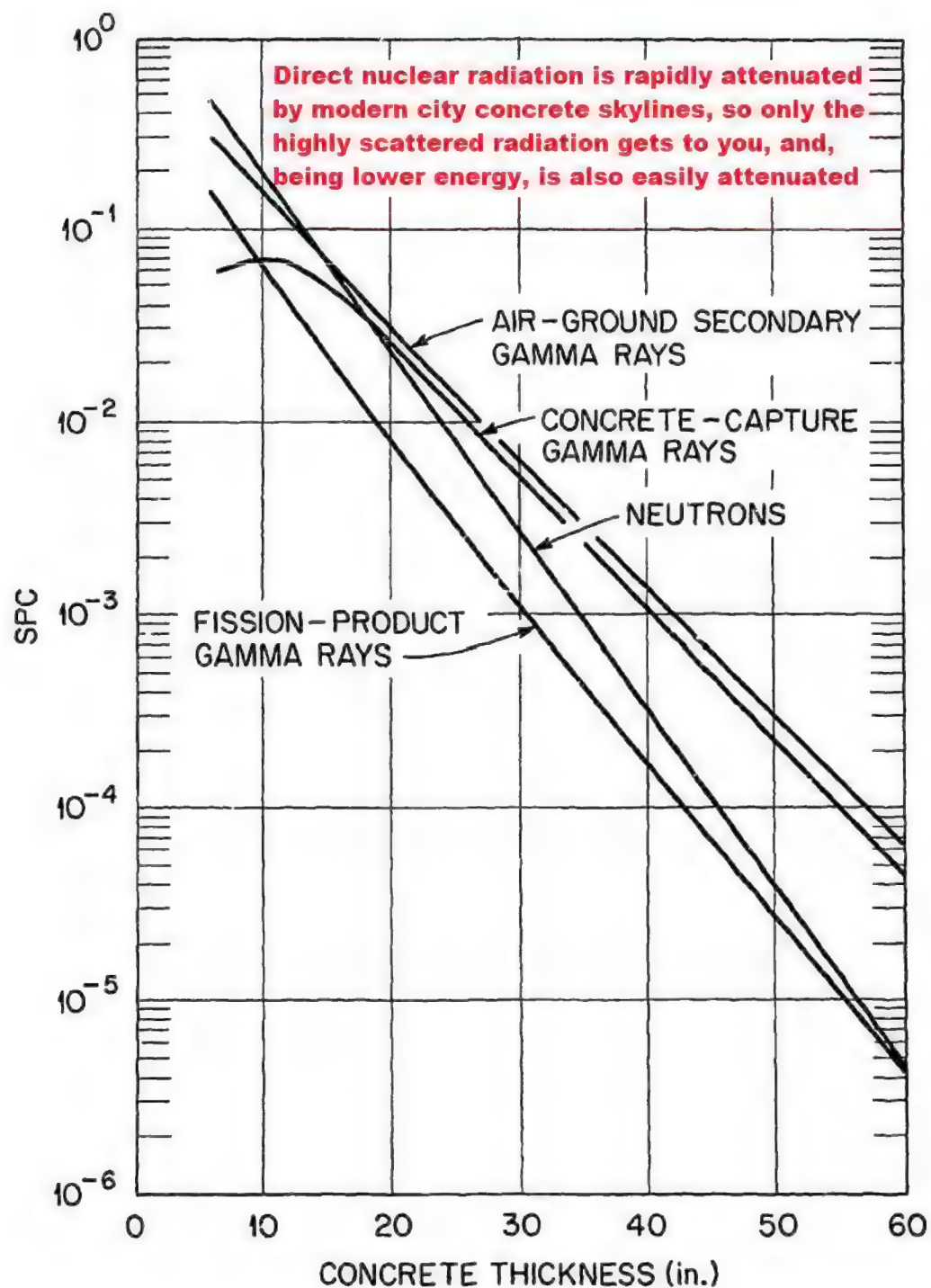


winds. Again, this assumes the blast winds are not obstructed and attenuated by the other surrounding buildings in a city, but it also suggests a simple civil defense precaution to accompany duck and cover in a crisis situation: bicycle helmets can be kept under emergency table "shelters" and can be put on quickly before the blast arrives, after a nuclear explosion, to minimise head trauma from flying debris or bodily translation and impact for high dynamic pressures and long blast durations. With duck and cover, you can avoid wind drag or injury from flying debris and you can keep away from a blast reflecting surface, then Northop shows in Figures 14.2 and 14.3 that you have 50% chance of surviving 37 psi peak overpressure from 1 megaton if you are lying down perpendicular to the direction of approach of the blast wave, or 62 psi if you are lying parallel to the direction of the blast (i.e., lying down facing away from the flash). In other words, blast is then very survivable!

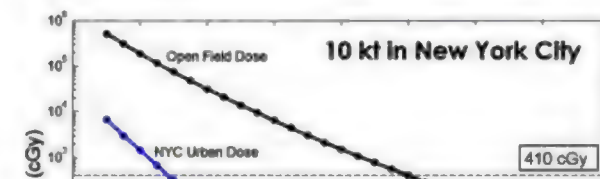
(3). **Simply allow nuclear radiation doses in modern cities to be attenuated severely by a factor of about 100 (from the 2011 Los Alamos report unobstructed desert "free field" initial nuclear radiation dose data study for the shadowing by intervening the buildings of in New York City)** - before you include the actual shielding by a building people are in, which is much better for INR than Glasstone claims, because essentially ALL of the urban area outdoor 100-fold reduced radiation dose is SCATTERED, not direct, so it is energy-degraded and not the highest-energy direct gamma and neutrons (which are attenuated severely on the transit through all the buildings in the radial line from the bomb)! Putting in "/100" to the computer formulae is not rocket-science! Simple. Nothing in the universe is perfect, but this correction is easy, and gives a minimal baseline for realism for the urban effects of nuclear weapons, lacking in all anti-nuclear diatribes. For higher yield weapons, the increased ranges for given radiation doses will lead to increased attenuation, since at increased ranges there will be more concrete buildings intervening in the the radial line from fireball to target, and although scattered radiation builds up at greater distances, it has lower energy than unscattered radiation and therefore is less penetrating (easier to shield). The most penetrating and wide-angle scattered nuclear radiation dose is from neutrons, but for the full range of 13 different nuclear weapon designs in the 1984 EM-1, the effective mean free-path for the surface burst neutron dose over the distance 1-2 km only ranges from 189 to 221 metres (the latter being weapon type 13, the neutron bomb). (The neutron dose will essentially completely arrived - except for a small portion due to delayed neutrons from fission products like bromine-90 - before blast damage occurs to those buildings located near the crater.) Glasstone is widely ignored when pointing out in one table in the last chapter - contrary to many free-field charts and graphs - that 50% survival in modern concrete buildings in Hiroshima occurred at 0.12 mile for the 16 kt air burst at 600 m; this scales up by the cube-root scaling law to predict 50% survival at 1.2 miles from a 16 megaton air burst at 6 km altitude; initial radiation dose distances scale as a weaker function of yield than blast.

**Additionally, the blast effects data (relating say overpressure to casualties) is way off in left-wing anti-nuclear propaganda.** The actual Hiroshima and Nagasaki data proves **much greater survival than bogus theoretical assessments: in reality, 100% people are not nude standing behind windows facing the blast while wearing roller-skates to ensure they are frictionlessly blown straight out of the 42nd floor by a 3psi blast, and killed by the impact from the gravitational fall to the pavement 420 feet below. Instead of the 1979 US Office of technology assessment claim that 50% of people are killed at 5psi, in Hiroshima and Nagasaki more than twice this was needed for the same effect, even without effective duck and cover or taking shelter (CLICK HERE FOR REPORT CONTAINING THE EVIDENCE FOR THIS).** Although blast duration increases with yield, this has no effect if the pressure is below the threshold for damage, so **Glasstone's curves are wrong for not reverting to cube-root scaling at high yields (impulse rules at low yields, peak pressures rule at high yields; Glasstone ignores this transition in his nonographs for building damage, which is corrected by the secret EM-1; report Dirkwood Corp report DC-P-1060 found that the blast mortality effect was 50% at 32 psi**





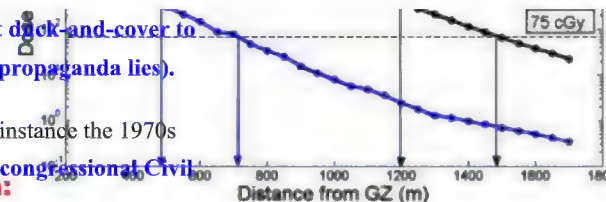
**Effect of neutron and gamma ray scattering on the angular distribution of initial radiation dose, 1.2 km from thermonuclear explosion**  
**FROM: J. A. Auxier, et al., *Nuclear Weapons Free-Field Environment Recommended for Initial Radiation Shielding Calculations*, ORNL-TM-3396.**



FROM: L. G. Mooney, *Calculations of Weapons Radiation Doses in Single-Compartment Above-Ground Concrete Structures*, Radiation Research Associates, Inc., RRA-M93 (November 26, 1969).

For the correct application of Hiroshima's lessons to modern higher yield nuclear war threats from Russia, see for instance the 1970s congressional testimony of T. K. Jones of Boeing Corporation in hearings linked [HERE](#) (February-March 1976 congressional Civil

Setting, Applied Research Associates (2011) found 100-fold dose reduction:



Defense Review), and [HERE](#) (November 1976 Nuclear War Survival hearings). Whenever the factual evidence surfaces, it is falsely labelled "controversial" or "wrong" by lying mainstream media charlatans, fraudsters, and bigoted snake oil salesmen, and ignored for political left-wing propaganda purposes, or the "arms controllers" simply tell lies claiming falsely that civil defense is a joke, just as they did in the 1930s (when civilian gas masks were discounted as a simple solution to deter Hitler from dropping his gas bombs on cities for a knockout blow!) and 1970s, debunked by T. K. Jones' famous 1979 letter to congress, extract below, which led to his being appointed Deputy Under Secretary of Defense for Strategic and Theater Nuclear Forces on June 1, 1981 under the new Reagan Administration, which aimed to win the Cold War by science and technology, not lose freedom via Russian nuclear coercion. Note that while the ACDA - i.e. the U.S. Arms Control and Disarmament Agency, whose faked nuclear weapons/war effects calculations lay behind the disastrous 1970s nuclear parity SALT farce which now results in dictators again intimidating democracies as was the case in the 1930s due to disarmament scams for "peace" which led to WWII - claimed 50% of people are killed at 5 psi peak overpressure from a megaton, while in fact U.S. classified Defense Nuclear Agency research showed that Russian public shelters were built to take 150 psi i.e. surviving within the 0.83 mile fireball radius of a 5 megaton surface burst, Russian apartment basement shelters were built to survive 60 psi, and good Russian improvised expedient shelters built outside cities survived 40 psi in American blast tests and gave upwards of 200 fallout protection factor (i.e., reducing the maximum hotspots of 20,000 rads to a survivable 100 rads and averting casualties).

ACDA disarmament bigots simply lied in the traditional "H. G. Wells" 1930s-sci-fi-style of disarmament fantasy, in testimony to congress, about the motivation and the detailed work of those people who disproved them, they ignored the classified data on blast and fallout shielding in their "effects" models, or their calculations assumed that people failed to use fallout shelters in order to deceptively "reduce" fallout protection factors by a factor of 7, by simply assuming people would go outside to be exposed to unshielded fallout (like most people, they also massively exaggerated the mean gamma ray energy of fallout during the sheltering period, as we have previously exposed, which is debunked by the measurements after the Redwing Zuni and Tewa tests) - they also lied that Jones didn't include fallout casualties when in fact he did include fallout correctly, finding that you don't get fallout casualties with the high degree of radiation shielding in shelters, an exact analogy to the situation where the 100,000 protection factor of activated charcoal gas mask filters gave no gas casualties in 1938 research, and disarmament bigots tried to claim that was some kind of ignorant dismissal of the horrors of true gas war so they would "arbitrarily" assume that only say 50% of people put on gas masks in order to then falsely claim that gas masks were somehow "calculated" to only work for 50% of people - i.e. only those assumed to be actually wearing them! - a travesty and abuse of scientific modelling (like lying that you have done detailed calculations proving that car seat belts make no difference in accidents, when in fact you have merely assumed that nobody wears the seat belts!), when in fact the true excellence of gas mask protection was proved to successfully deter Hitler from using gas on civilians with gas masks, saving millions contrary to the hate attacks on civil defence by disarmament propaganda deceivers (who recognised that civil defence made deterrence credible, and so was a threat to their bigoted plans for peace at any price):





**BOEING AEROSPACE COMPANY**P.O. Box 3999  
Seattle, Washington 98124

A Division of The Boeing Company

January 22, 1979

The Honorable William Proxmire  
Chairman, Senate Banking Committee  
United States Senate  
Washington, D.C.

Dear Senator Proxmire:

Your request in recent hearings for an explanation of the discrepancy between our estimates and ACDA's estimates of Soviet losses in a nuclear war is clearly important and warrants a clear and candid answer. Unfortunately, Mr. Spurgeon Keeny, the Deputy Director of ACDA, chose to incorrectly represent our work. I appreciate the opportunity to set the record straight and to point out what we have determined to be the factors contributing significantly to the differences between the two estimates.

Population Protection

In his attempt to discredit our work, Mr. Keeny incorrectly inferred that this work was based on mere "assumptions" and "simple ratios." In fact, our approach was to analytically duplicate the provisions of the Soviet Union's civil defense plans and preparations. This effort was supported by extensive research into Soviet literature, use of rigorous system engineering functional analysis techniques, and a program of testing to establish the effectiveness of Soviet shelters and industrial protection methods. Moreover, the impact of uncertainties and possible imperfections in Soviet execution of their plans were examined parametrically.

Mr. Keeny's statement that we "assumed there would be no casualties from fallout" is false. The record of hearings before the Joint Committee on Defense Production (November 17, 1976) clearly shows that the data presented counted as fatalities all persons receiving a radiation dose of 200 rads or more. Moreover, our more recent studies of which ACDA is aware have treated this value parametrically.

By protecting their people against fallout, the Soviets can substantially limit their population fatalities. Figure 1 shows that even very rudimentary protection, such as basements or expedient shelters, is sufficient to minimize fatalities. In the ACDA analysis, the majority of the evacuees were assumed to have a protection factor of 10 or less, which results in enormously high fatalities compared to what the Soviets could achieve if they carry out even the most modest of the measures outlined in their plans and literature.

**Assumption Variables Versus U.S.S.R.  
Civil Defense Effectiveness  
Degree of Fallout Protection for Evacuees and Rural Population**

**BOEING**

100

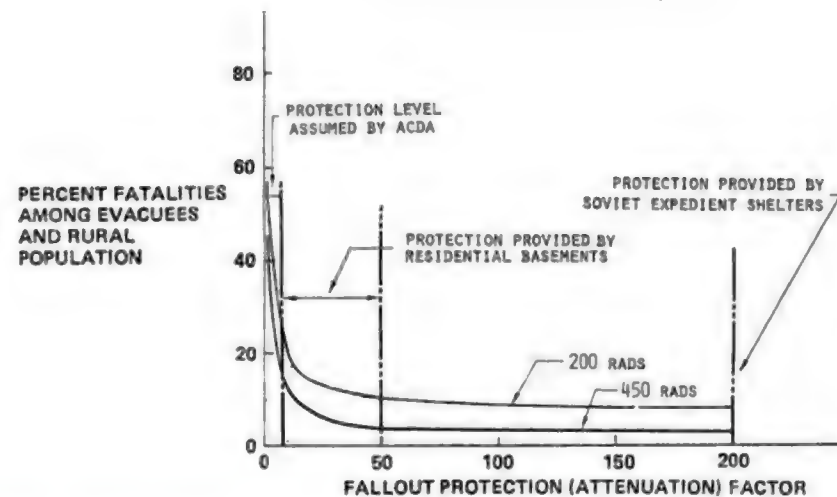


FIGURE 1

Mr. Keeny has incorrectly characterized our treatment of blast protection. In their cities, the Soviets are building industrial shelters and apartment basement shelters with a blast resistance of at least 150 psi and 60 psi, respectively. These ratings were calculated for the Defense Nuclear Agency based on knowledge of construction details such as beam dimensions, concrete quality, and structural reinforcement size and placement. The Soviet designs for expedient shelters have been built and exten-

ABOVE: extracts from the famous 1979 T. K. Jones Boeing Corporation letter, page 2, debunking "arms control" nuclear weapons effects liars in detail. This really exasperated my dad, John B. Cook, who was a Civil Defence Corps instructor in the 1950s, but was old enough to live through the 1930s appeasement era when Philip Noel-Baker repeated lied on the effects of gas bombs, claiming gas masks will never work, because babies and the elderly won't put them on properly, blah, blah, so we must ban evil civil defence and instead guarantee peace by appeasing the Nazis because of we don't, they will DEFINITELY gas us all with a massive gas bomb raid on day 1 of war. In fact, Philip Noel-Baker did this first in a BBC radio speech in 1927, 6 years before Hitler was elected. Family members who knew the truth from gas attacks in WWII - largely negated by simple gas masks and going into shelters for droplets of persistent liquids like mustard agent - had to put up with this lying BBC and other media propaganda for disarmament throughout the 1930s, to the joy of the Nazis who were secretly rearming and preparing for invasions (not necessarily war, since Hitler would have been quite happy to "peacefully" invade the world and then use efficient gas chambers to dispose of those whose race or views he found to be "offensive", like modern snowflakes today). What really irritated dad, however, was that Philip Noel-Baker, having lied about gas effects in his February 1927 BBC radio broadcast and throughout the 1930s to great applause from pacifists who effectively did Hitler's bidding, was made a Lord and a Nobel Peace prize winner for appeasement propaganda lies that led to world war, and then did the same thing all over again during the cold war, issuing nuclear weapons lies. In a 1980 House of Lords debate on Civil Defence, he lied that the air burst in Hiroshima produced lethal fallout: "It covers everything in Hiroshima not already rendered lethal, and so those who have escaped the flash, the blast, the fire, will die within a short time. The first atomic bomb weighed two kilograms. It was little larger than a cricket ball. ... In 1978, more than 2,000 died in Hiroshima from its long-term effects."





## Assumption Variables Versus U.S.S.R. Civil Defense Effectiveness Distance Evacuated

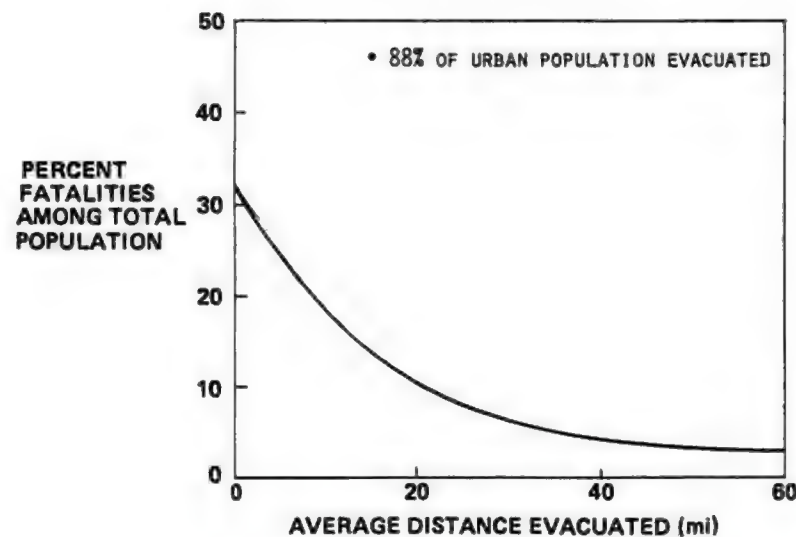


FIGURE 2

## Assumption Variables Versus U.S.S.R. Civil Defense Effectiveness Blast Protection Provided Evacuees and Rural Population

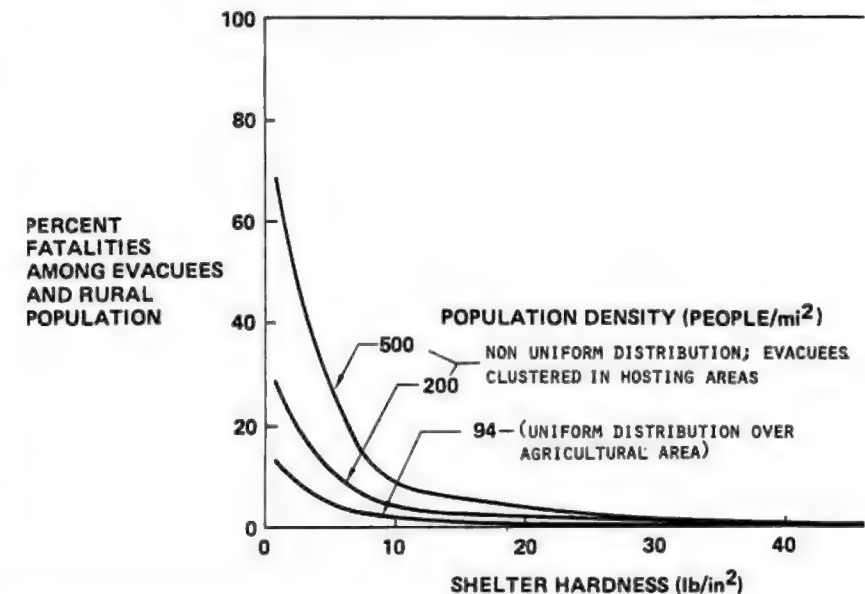


FIGURE 3

As to the reasons why our results differ from those produced by ACDA: ACDA assumed that 30 percent of the Soviet urban population would not be evacuated but that the good quality shelters would accommodate only 10 percent. Thus, 20 percent of the Soviet urban population was assumed unevacuated and inadequately protected, which of course subjects them to massive losses. The Soviet plans, which we endeavored to represent in our analysis, indicates that urban residents not sheltered will be evacuated.

A second difference centers around the way in which the Soviets choose to distribute and provide blast protection for their evacuees. The ACDA analysis assumed that the Soviets would cluster their evacuees in hosting areas, which we estimate could result in some concentrations as high as 500 persons per square mile. The evacuees were assumed to have no blast protection, so fatalities would occur at 3 to 7 psi according to the source used by ACDA. Figure 3 shows that a distribution of 500 persons per square mile and 3 psi fatal blast level results in a fatality level almost 100 times greater than a uniform distribution and blast protection to 15 psi (the minimum provided by Soviet expedient shelters). It is important to remember that it is the Soviet Union and not the United States that controls such factors as evacuation, distribution, and sheltering of the Soviet citizens.

The ACDA study of industrial protection, which I have reviewed, is not a competent work. The hardness levels known to be achievable on industrial components are seriously under-

Every word here is totally untrue, and easily disproved, but nobody in the House of Lords explained the facts to him, so this he quotes on page 5 of his 1980 Ecology Party book "How to Survive the Nuclear Age", and on page 6 he adds an attack on civil defence. "I feel the same outrage in 1980 which I felt in 1945. The Government's civil defence policy is a disaster. It is a policy of letting citizens die and survive to every citizen ... to strengthen the walls and ceilings as the pamphlet suggests, he needed a garden, a spade, sandbags, and the strength to dig and transport a ton of earth. However, the infirm or elderly don't need to hire an army of helpers to make a fallout

**stated while the difficulty of achieving these levels is overstated. The resiliency of industry in recovering from damage is disregarded. The report's fixation on the capability of one-megaton weapons to damage industry is misleading since the U.S. would be able to deliver few of these weapons against Soviet targets. Moreover, the ACDA study fails to assess the impact of protection on the survival and recovery of the Soviet industrial base as a whole.**

shelter, because - contrary to Philip Noel-Baker - you can simply use water from a hose to fill up water filled bags inside boxes which do the shielding, as explained in the Home Office scientific advisory branch *Fission Fragments* magazine article (reprinted in the *Royal Observer Corps Journal*, vol. 27, issue 2, February 1985, page 26, below). In any case, in actual implementation, you would have some organization for civil defence in time of crisis, with people in neighbourhoods helping one another mending hose pipes, helping to assemble emergency shelters around tables in homes, etc). Noel-Baker ends his case by absurdly calling for disarmament as a "sure way to avoid the war", by again ignoring the lessons of his own 1930s disarmament war effects propaganda which led to appeasement and thus the encouragement of enemy aggression, triggering the Second World War: "This is not a utopian dream. It is the system by which David Lloyd George disarmed Germany in 1919. " *This claim typifies Noel-Baker's absurd, self-contradictory nonsense, since DLG's 1919 "system" led to another, far worse, world war, not to peace.*

In that 1980 Ecology Party book "How to Survive the nuclear age", there is after the deceptions from Labour Party Lord Noel-Baker, a summary of civil defence shelter advice, but then the book ends with the transcript of the final big speech from Lord Mountbatten to the arms control anti-nuclear propaganda institute SIPRI at Strasbourg on 11 May 1979 (the IRA tragically ended his appeasement campaign with a bomb on his boat off the coast of Sligo, Ireland, on 27 August 1979): "A military confrontation between the nuclear powers could entail the horrifying risk of nuclear warfare [*hardly likely if we have overwhelming superiority for credible deterrence, as we should have had - but did not have - in the 1930s to deter Hitler*]. ... A new world war can hardly fail to involve the all-out use of nuclear weapons [*this is debunked by former NATO General Sir John Hackett's book "The Third World War" which shows how escalation risks will be controlled even in the event of a Russian first-strike on Britain, provided that we are prepared for nuclear war - this book will be discussed in detail later in this blog post, below*]. ... Let us all resolve to take all possible practical steps to ensure that we do not, through our own folly, go over the edge."





**FROM: "Royal Observer Corps Journal",  
Feb. 1985, page 26**

# FRAGMENTS

Feb. '85

## **PROTECTION AGAINST RADIATION** **A. L. Mather ex-SA, Northumberland**

In 'Protect and Survive' a recommendation is made on page 11 para. 2 'Use tables if they are large enough to provide you all with shelter. Surround them and cover them with heavy furniture filled with sand, earth, books or clothing'. Similar shelters are proposed in paras 1 and 3.

Apart from the fact that under certain circumstances of location and weather sufficient soil may not be available, none of the materials suggested for radiation protection is of use to the shelter-bound occupants. The use of survival supplies as a radiation barrier is to be recommended, if not, indeed considered essential. As previously suggested fuel supplies, which have a half value thickness approaching that of soil, could be used in this way. Food supplies should be stacked in boxes as the inner protective barrier together with immediate water supplies. Water has a half value thickness of 200mm compared with 140mm for earth. One therefore has only to create a water barrier 50% greater in width to equate with a soil barrier. The water barrier can be erected in a very short time merely by filling suitable containers by means of a hosepipe. In this way an adequate shelter can be made in a fraction of the time needed for the filling and transportation of sandbags. Further this would provide a strategic supply of water for fire fighting, drinking, washing and for the later survival period during which water supplies may be limited.

Cheap containers would be needed for such a barrier and dustbins, plastic bottles etc would be expensive and inconvenient to store when not required. There is, however, a suitable container

UK Home Obs  
FRAGMENTS" and  
Rec

their side) without bursting or collapsing and access may be made to them by a screw top which is attached to the screw top. Add prevent the growth of algae or bacteria.

Not only can one stack these water bags on the shelter but these could also be put on the floor to improve radiation protection in the fall of the bomb. To improve fire protection in the upper floor these bags is low (£592 per 1000 including the thickness of the box to improve the thickness of the box to improve increase the cost of the box by 50%. Not improved by simplification of design and

One weakness of such a system is the bags to rupture by blast damage. Those to openings should be protected by a suit carpets, heavy timber and/or doors.

There would be load limitations on such a shelter aspect would need to be discussed with the authorities. However as the half thickness for water is 200mm then the equivalent weight of water would be 200mm area of the floor.

The progressive reduction of radiation shelter will allow the progressive use of a barrier. The empty water bags may be used

This system would perhaps find its place

made by Bowater Scott Ltd (and possibly by other companies) which is used for the conveyance of milk. These are double walled plastic bags of five gallon capacity with screw caps. The bags are supplied flat together with fold flat heavy duty cardboard boxes. When the box is erected and the plastic bag within is filled, it takes the shape of the box and forms a fairly rigid 'brick' of water of dimensions 25 cm × 24 cm × 42 cm. These bricks may be stacked to a height of 4 units (on

shelters but there is no reason why v supplement barriers in other types of collapsed form are compact and may be an emergency the barrier may be erected a very short period of time without any g considerable help to elderly or infirm p people with only a short time to constru

EXTRACTS

Table B-1. Severe/Moderate Blast Damage Radii for Surface Bursts (metesr)

Material classification		ALPHA 0.01	BRAVO 0.05	CHARLIE 0.10	DELTA 0.50	ECHO 1 KT
Field fortifications	Mod	35	55	70	85	125
Earth covered surface shelters	Sev	35	60	65	80	100
Monumental-type multistory wall-bearing bldgs.	Mod	150	210	250	350	575
Multistory, wall-bearing bldgs (apt house type)	Sev	100	165	200	275	400
Multistory, reinforced bldgs (small window area)	Mod	65	100	130	200	350
Multistory, steel frame office bldgs.						
Wood frame bldgs.	Sev	140	195	250	350	690

SOURCE: U.S. ARMY FIELD MANUAL "FM 5-26, EMPLOYMENT OF ATOMIC DEMOLITION MUNITIONS (ADM), AUGUST 1971".

PROTECTION (CASUALTY REDUCTION FACTOR) =  $\frac{\text{AREA OF SEVERE DAMAGE FOR HIROSHIMA'S WOOD FRAME BUILDINGS}}{\text{AREA OF SEVERE DAMAGE FOR EARTH COVERED SURFACE SHELTERS}}$   
=  $690^2 / 100^2 = 6.9^2 \sim 50$  FOR A 1 KILOTON SURFACE BURST.

SO MOVING TO EARTH COVERED SHELTERS REDUCES CASUALTIES TO 2%, AND THEY ALSO PROVIDE RADIATION SHIELDING. IN ADDITION, THE "FIRESTORM" AND ITS "SOOT NUCLEAR WINTER" FANTASY, WERE DEBUNKED BY GEORGE R. STANBURY, WHO PLANNED THE GERMAN FIRESTORMS; YOU NEEDED 50% IGNITION OF MEDIEVAL WOODEN HOUSES IN HAMBURG TO START A FIRESTORM, WHEREAS THE SIMPLE FIREBALL SHADOWING OF HIGH-RISE MODERN CITY SKYLINES REDUCES THIS TO 5% OR LESS, PREVENTING FIRESTORMS AND CLIMATIC EFFECTS. THIS IS SUPPRESSED BY THE NUCLEAR EXAGGERATIONS BIAS OF JOURNALISTS.



UNCLASSIFIED ~~SECRET~~  
ii  
JOINT DOD/DOE TRIDENT MK4/MK5 REENTRY BODY  
ALTERNATE WARHEAD PHASE 2 FEASIBILITY STUDY REPORT (U)

9.3.1.2.1. (S) SSPK Against 52L7

~~SECRET~~ The SPETWG calculated the SSPK of each candidate against a target with a VNTK of 52L7.

When the W88/MK5 was developed, this was the assessed VNTK of the hardest Soviet silos. Although those SS-18 silos have since been assessed to be much harder than 7000 psi, the SPETWG considers 52L7 to be a significant figure of effectiveness for this system because of the history of its use. The                      was used, and the results varied monotonically with yield, with a

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b(3)  
DOE  
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b(3)  
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ABOVE: the most advanced and latest American "counterforce" nuclear weapons, the oralloy (Oak Ridge Alloy, aka U235 loaded secondary stage) W88 nuclear warheads were designed to knock out the huge well shock-insulated Russian SS-18 missile silos when they had a physical vulnerability number of 52L7, corresponding to a peak overpressure of 7000 psi, which

is well within the crater radius. This is highly relevant today, since the SS-18 (in Russian nomenclature: R-36M2) is still in service (like the American W88), and the Russians have 46 of them, each with 10 warheads of 800 kilotons each, i.e. a total of  $10 \times 46 = 460$  nuclear warheads and 3680 megatons. These 211 ton SS-18s are due to be replaced with the latest 208 ton **Sarmat** (RS-28) missiles (which made its first test flight on 20 April 2022, during the Ukraine war), extending the range from 11,000 km for the SS-18 to 18,000 km for the Sarmat. Unfortunately, as this declassified report shows, as with the Russian civil defense shelters, the silo hardness was underrated and the physical vulnerability is not 52L7 as originally supposed. The SS-18 silos could take much higher peak overpressures than 7000 psi and related ground shock, cratering throwout, etc. (The current "best guess" - and this is not proof tested due to the ban on atmospheric nuclear testing - is that it takes a peak overpressure of 10,000 psi to blow the silo door off the SS-18 silo and wreck the missile, which occurs at a distance from the warhead similar to its inertial gyroscopic CEP targetting error if the accurate GPS satellite navigation system is taken out by high altitude bursts, so to get a high kill probability you need to target many warheads per silo, a hugely inefficient strategy when all the enemy has to do is launch the SS-18 out of the silo before your warheads arrive!) In addition to this underestimate of the hardness of vital military "counterforce" targets in Russia, **the Americans also massively over-estimated the cratering and ground shock effects for high yields in ordinary soils (not easily broken coral reefs!)**. (For references, please see the earlier blog posts about cratering exaggerations linked [here](#) and [here](#).) The points we want people to take away, or at least openly investigate and question are:

(1) countervalue (anti-city) effects of nuclear weapons are bunk because, aside from the mistakes and deliberate omissions Glasstone and Dolan made for propaganda purposes in their 1977 edition, if the chips really do go down, you *or your opponent* can simply evacuate cities - most of which self-evacuate at 5pm every weekday, anyhow - evacuation is not a miracle, despite what *Scientific American* or *Bulletin of Atomic Scientists* says - before issuing an ultimatum, *just as the UK did with evacuating kids from London in Operation Pied Piper on 1 September 1939 before issuing an ultimatum and then declaring war 48 hours later*,

(2) you or your opponent can not only safeguard the civilians in cities by evacuating them (or putting the people into shelters/basements etc if you have them, as the Russians do, and as thankfully the Ukrainians do which is a key reason they have been able to fight the Russian invasion, as a result of having previously been part of the civil defense obsessed USSR), but *100% of missiles in silos can also be safeguarded from destruction by simply firing them out of their silos, if seriously threatened by a counterforce (anti-silo) enemy attack*. In other words, if you decide to credibly target enemy *nuclear weapons* (a very costly strategy in terms of the number of W88 warheads per silo for any significant chance of damaging a >7000psi peak overpressure-requiring SS-18 missile silo, which are about as well protected as the concrete and steel around most nuclear power reactor cores), your targetting policy will encourage the enemy to *launch first, to save their missiles from being taken out!* So using nuclear weapons to target other nuclear weapons in hardened silos (or hidden in the sea in submarines!), apart from being extremely inefficient and costly in terms of your stockpile, is also a policy that *provokes the risk of enemy "launch on warning" crisis instability* because you are, if "successful", *removing the enemy's protected second strike retaliation capability, and once the second strike option is gone, they are pushed back into the old first-strike aka launch-on-warning policy*, which is extremely dangerous if their radar operators mistake some third party's missile testing for a launch against them, etc., etc. So the obsessive "disarmament fantasy" of *only using nuclear weapons to try to deter other nuclear weapons in silos by targetting them*, is a dangerous illusion that provokes crisis instability and risks an accidental nuclear war, in addition to being an exceptionally ineffective deterrent! All you do with that delusion is to deter the enemy from a second-strike policy, and force the enemy into a dangerous first-strike/launch on warning policy! If you can knock out the enemy warheads in their silos, the enemy will *simply ensure that there is a very high probability that their missiles have been launched out of their silos before your warheads arrive, so you will be uselessly destroying EMPTY missiles silos!* (your warheads take 25 minutes to arrive for an ICBM between continents, and 10 minutes for a back door attack of an SLBM launched from a submarine; less time is required for a Russian sub to hit NY or LA because they are beside oceans, unlike Moscow and most Russian targets that are well inland!).

(3) In any case, how do you target enemy SLBMs in submarines hidden at sea? Similarly, the most numerous Russian ICBM in their stockpile is the mobile SS-27 Mod 2/RS-24, of which they have 135 missiles on 16-wheeled mobile launch vehicles which can move around, with 4 separate MIRV nuclear megaton warheads per missile and a range of 11,000 km. How do you target them as they move around during a crisis situation? They can easily move position enough to survive an nuclear warhead in the US stockpile during the 25 minutes while your missiles are on the way to hit them in a crisis situation, so you are literally trying to hit a moving target - do you really believe America will be able to reprogram the target locations for ICBM warheads in flight as they are moving? The whole idea would be amusing if it wasn't so tragic (there was an effort to create a warhead which could track its moving target and adjust its trajectory accordingly, the MARV - Maneuverable Reentry Vehicle - **the only known Western MARV was the Pershing II warhead**, which disarmed as part of the INF treaty to appease Russia/pro-disarmament politicians in the West). *So the whole idea of using nuclear weapons to hit enemy nuclear weapons before they are launched is crazy and dangerous*. It's no joke that all the disarmament propaganda claims falsely that nuclear weapons have only the purpose of targetting other nuclear weapons in silos. That policy is dangerous, because it just

encourages the enemy to get the weapons out of their silos before your weapons can arrive, so you are not deterring the enemy to launch their weapons, but forcing them to launch on warning, a lunatic policy! Nuclear weapons are only effective in a counterforce operation against armies on the move, either as a deterrent or to physically stop invasions without collateral damage by air burst enhanced neutron weapons. The only real use of nuclear weapons should be, as Oppenheimer said, as a tactical threat to stop the military invasions and attacks that triggered two world wars.

Nuclear weapons *are* exceptionally good at deterring (or stopping) armies on the move! Not so if they are dispersed in defensive positions like hasty earth covered emergency civil defense shelters that resist 40 psi peak overpressure and give a protection factor of 200 or more against radiation; but the point is that they deter enemy military *offensives* and once the enemy has crossed your border you are within your rights to stop them; the credible threat will *prevent* invasions this way, ending world war. (Nuclear weapons are also effective at destroying enemy nuclear weapons in flight, e.g. the 2 kt W66 neutron warhead in the American Sprint ABM missile could melt down the fissile material in Russian nuclear warheads in flight in the atmosphere, and the 5 Mt W71 x-ray warhead of the Spartan ABM missile would ablate, deflect and destroy Russian warheads in space; they also knock down trees to create demilitarised zones in jungle warfare which enable easy identification of insurgents entering those zones for attacks.)







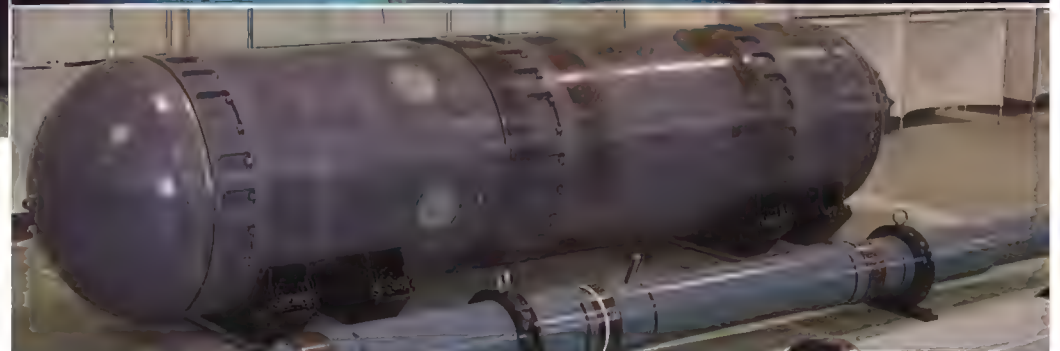
**President Putin  
double-primar  
warhead design  
November 17,**

**Yuri Trutnev, 77  
weapons is a spe  
Novosti, 11/22/20  
<https://ria.ru/2017>**

**"But in the mean  
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**Boris V. Litvinov showing Putin the world's smallest diameter (152.4mm) 2.5 kt artillery shell (above), and a 99.85% clean thermonuclear bomb (above right and right), 30 March 2000.**





I.V. Litvinov, President Putin, P.I. Sumin at RFNC-VNIITF, 30 March 2008



PRESIDENT PUTIN AWARDS NUCLEAR MERIT TO THE FATHERLAND IN 2000.





Испытания ядерных зарядов				RUSSIAN DEVELOPMENT
TEST	DATE	PLACE	KILOTONS	YIELD TACTICAL NUCLEAR
№ по каталогу	Число, месяц, год	Место проведения испытаний	Энерговыделение, кт ТЭ	Примечание
245	13.02.1966	СИП шт.Е-1	125	Испытание заряда с термоядерным блоком, содержащим дейтерий под большим давлением
280	07.01.1968	СИП шт.810	7.5	Физический опыт для определения минимального количества дейтерия, которое может устойчиво взрываться.
294	09.11.1968	СИП шт.606	4	С 1967 по 1970 гг. испытывался заряд с термоядерным блоком, дающим минимум наведенной активности. Всего проведено 8 таких опытов.
296	18.12.1968	СИП шт.508	8.9	
299	13.04.1969	СИП шт.24П	0,001-20	
302	04.07.1969	СИП шт.710	15	
333	22.03.1971	СИП шт.510П	67	Испытание особо “чистого” заряда с высоким коэффициентом термоядерности (около 1%)
357	28.03.1972	СИП шт.191	6	
377	10.12.1972	СИП скв.1204	140	
382	23.07.1973	СИП скв.1066	212	
400	31.05.1974	СИП скв.1207	71	
422	08.06.1975	СИП шт.165	22	

722	08.08.1975	СИП шт.105	52
616	18.08.1983	СИПНЗ шт.А-40	0,001-20
658	28.12.1984	СИП скв.1353	0,001-20



Специалисты другого ядерного центра - ВНИИТФ - сначала тоже предполагали при создании "чистых" ЯВУ для взрывов наружного действия использовать твердые дейтериды лития с небольшой добавкой трития (для затравки). Однако в 1963 г. возникли новые идеи. Так, физики-теоретики ВНИИТФ Е.Н. Аврорин, Е.И. Забабахин, Л.П. Феоктистов, А.К. Хлебников, А.А. Бунатян и другие. предложили провести физический опыт, в котором осуществить "зажигание"\* большого количества трития и дейте-

\* Дейтоны, дейтроны - разные названия ядер дейтерия.

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### TRANSLATION OF EXTRACT FROM PAGE 138:

Specialists of the Other Nuclear Center - VNIITF - initially suggested using solid lithium deuterides with a small addition of tritium (for seed) when creating "clean" JAVA for external explosions. However, in 1963, new ideas emerged. So, theoretical physicists of VNIITFE.N. Avrorin, E.I. Zababakhin, L.P. Feoktistov, A.K. Khlebnikov, A.A. Bunatyan and others. they offered to conduct a physical experiment in which to "ignite"\* a large amount of tritium and data-

\* Deutons, deuterons are different names of deuterium nuclei.

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рия. Для этого на заводе Института была создана специальная физическая установка ФО-24, сконструированная группой специалистов первого конструкторского бюро ВНИИТФ под руководством Б. В. Литвинова и П.А. Есина. Физический опыт с использованием этой установки был проведен 04.02.1965 г. на Семипалатинском полигоне. В этом эксперименте, возможно, впервые в мире было осуществлено зажигание большой массы газообразного дейтерия [17].

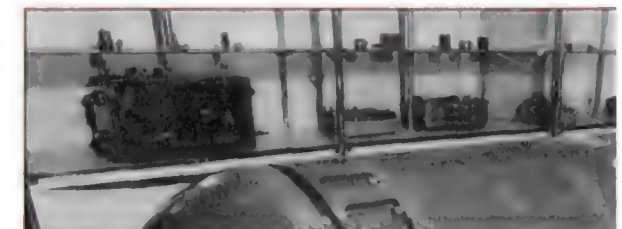
Развивая идеи, реализованные при проведении этого опыта, Е.Н. Аврорин предложил в новой физической схеме заряда использовать газообразный дейтерий под большим давлением (повышенной плотности). Проверка этого конструкторского предложения, прове-

ria. For this purpose, a special physical installation at the Institute's plant, designed by a group of design bureau of VNIITF under the leadership of P.A. Esin. The physical experiment with the use of deuterium was conducted on 02/04/1965 at the Semipalatinsk test site. Perhaps for the first time in the world, ignition of deuterium was carried out [17]. (NOTE: Russ

Developing the ideas realized during the experiment, E.N. Avrorin proposed using deuterium gas under high pressure (high physical charge scheme). The verification experiment was carried out on 13.02.1966 at the Semipalatinsk test site and fully confirmed the results of physical calculations. It was carried out from the primary node, the fraction of which did not exceed 6% of the total energy, the fact of obtaining energy release from deuterium was proved. This important scientific result opened the way to the use of the clean energy in the energy sector. What could not be obtained by the use of complex installations for thermonuclear fusion. This was a disproportionately large scale in an underground

\* Physicists call "ignition" the implementation of a thermonuclear reaction with a noticeable energy release, which can lead to a flow of thermonuclear reactions.

### ABOVE: TRANSLATION FROM PAGE 138 AS PROVED IN A 6% FISSION (94% CLEAN)











**40 KT at 350 m  
burst altitude**

Общий вид облака воздушного ядерного взрыва,  
произведенного 14.09.1954 г. на Тоцком учении: а) — через несколько  
секунд после взрыва; б) — через несколько минут после взрыва

Мощности доз гамма-излучения на местности в районе эпицентра  
воздушного ядерного взрыва, произведенного на Тоцком учении

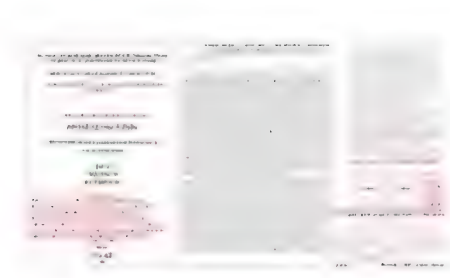
Расстояние от эпицентра взрыва, м	Мощность дозы гамма-излучения на различное время после взрыва, Р/ч				
	30 мин	1 час	5 часов	1 сутки	3 суток
100	-	-	12	1	0,3
200	140	85	9	0,8	0,1
400	19	12	1,2	0,1	-
700	2,0	1,2	0,1	0,001	-
1000	0,3	0,2	0,02	0,002	-

Необходимо отметить, что причиной радиоактивного загрязне-

**14 September 1954**

The power of gamma radiation doses on the  
epicenter of an aerial nuclear explosion produced

Distance from the epicenter of the explosion, m	Gamma radiation dose rate from explosion		
	30 min	1 hour	5 h
100	-	-	-
200	140	85	-
400	19	12	-
700	2,0	1,2	-
1000	0,3	0,2	-



ABOVE: Russian nuclear weaponeer **Boris Vasilyevich Litvinov** explaining how the world's smallest diameter nuclear artillery shell and allegedly cleanest thermonuclear weapon work to President Putin on 30 March 2000, during his visit to VNIITF at Snezhinsk, Russia. (President Putin wrote on his filmed entry on the Visitor's Book at VNIITF Snezhinsk - screen print of the entry is included later below in Russian - *"The biggest danger facing Russia and the whole world is the violation of the balance of power at the cost of huge efforts and sacrifices to the Soviet. The Union managed to achieve a balance of great merit in this, due to your team together. We are obliged not only to maintain the existing achievements but also to achieve new frontiers relying on the talent and courage of our scientists. With hope and love, Vladimir Vladimirovich, March 31, 2000"*. This is from the film the lab put out in 2005, and we include a selection of stills from it. We're not as yet entirely sure of the reason for the possible discrepancy in dates of Putin's visit, 30 and 31 March 2000, from different sources. It is obviously possible Putin stayed overnight, arriving on 30 March 2000, and signed the visitor's book when leaving the next day.

*Peace through credible war deterrence:*

The worthless Budapest Memorandum on Security Assurances signed by Russia, UK and Ukraine on 5 December 1994 led the way to the removal of the war-preventing nuclear deterrent from Ukraine: the liars claimed like the 1930s Nazis that signatures on paper would guarantee survival, not deterrence. OK, you edit a TV show or paper, and you think this is not relevant to today's problems faced by the person in the street unless Putin actually presses the button. You're a liar if you claim this. Paying higher energy prices? It's due to nuclear disarmament liars allowing Putin to start the war, cutting energy supplies to Europe, driving up prices. Like the disarmament of the UK up to 1935 (and slower rearmament thereafter, to avoid provoking a tantrum from Nazis, in the name of "peaceful coexistence" with state terrorism and racism), Ukraine's nuclear disarmament from 1994-8 guaranteed war, not peace; it gave the green card to the supporter of enemy disarmament, Russia. *Nazis in the 1930s pushed for Western disarmament in the name of "peaceful" gas chamber genocide and*

*"peaceful" invasions without opposition (because their enemies had disarmed), just as the thugs do today.* As you'll see below in this post, this is not "news". It's the regular, repeating, trick used by bankrupt dictatorships to start world wars: get your enemies to disarm then invade neighbours with impunity! They don't think they can be ever "proved lying evil warmongers by humble yours truly" because they will just keep parroting the lie that if Ukraine had nuclear weapons, there would have been a nuclear war between Ukraine-Russia, not peace: HEY GUYS COUNTRIES WITH NUCLEAR WEAPONS HAVEN'T HAD NUCLEAR WARS YET! HISTORY SHOWS THE ONLY COUNTRY TO HAVE BEEN ATTACKED WITH NUCLEAR WEAPONS (AUGUST 1945) DID N-O-T HAVE ANY NUCLEAR WEAPONS. BEING NUCLEAR UNARMED DIDN'T SAVE IT FROM BEING NUKED. OK NOW? NO?????????! LET'S SEE ALL THE SECRET FACTS THAT THE "SECRECYP-OPPOSED" BLOGGERS REFUSE TO TELL YOU IN THE NAME OF THEIR EFFORTS TO START A NUCLEAR WAR:

*(It should be noted that we're not "trying to be controversial" but just trying to revert politicians to the saner nuclear situation that existed during the Cuban missiles crisis when OVERWHELMING SUPERIORITY enabled a safer resolution than the American FASists William M. Arkin and Hans M. Kristensen in their 2020 paper "US Deploys New Low-Yield Nuclear Submarine Warhead" which sneered ignorantly and with evil warmongering maliciousness to encourage Putin to murder kids in Ukraine (they should be kicked out of the status of "experts" since they are provably malign charlatans like the "Glasstone/Nukemap" liar in the populist Marx-media), at the East-West moral asymmetry of Putin-Trump (like the disproved liar Hans Bethe who quoted Brezhnev to disprove Reagan's evil empire speech etc): "... while Russian low-yield nuclear weapons lower the threshold making nuclear use more likely, U.S. low-yield weapons instead "raise the nuclear threshold" and make nuclear use less likely." - nuclear war FAS-ist fans sneering at the West-East moral asymmetry in 2020, <https://fas.org/blogs/security/2020/01/w76-2deployed/> We'll go into the details later on, below. But if we were trying to be "controversial" we'd recommend implementing ABM in Western cities to enhance credible deterrence, or even a first strike to disarm the aggressor and end the war - whoops - should have typed what FAS-ists call "special military ops"!)*



Federation  
of American  
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# US Deploys New Low-Yield Nuclear Submarine Warhead

By Hans Kristensen • January 29, 2020

By William M. Arkin\* and Hans M. Kristensen

The authors of the NPR also saw the dilemma of suggesting a more usable weapon. They thus explained that the W intended to enable, nor does it enable, 'nuclear war-fighting.' Nor will it lower the nuclear threshold." In other words yield nuclear weapons lower the threshold making nuclear use more likely, U.S. low-yield weapons instead "raise the and make nuclear use less likely. Undersecretary of Defense for Policy John Rood even told reporters that the W76-2 stabilizing" and in no way supports U.S. early use of nuclear weapons, even though the Nuclear Posture Review expl warhead was needed for "prompt response" strike options against Russian early use of nuclear weapons.

**How FAS-ism in America supports fucking shit nuclear dictators ("morally equivalent to Trump"!!**

*ABOVE:* from 1992-8, Russia pushed for Ukraine (which has excellent nuclear competence, having Europe's largest nuclear power station, which could have been used to irradiate lithium to produce tritium for independent maintenance of nuclear warheads), to disarm its extensive nuclear warheads using its **Cold War traditional Russian supported hypocritical "peace through nuclear disarmament" propaganda movements in the Western media and Western politics (including the current US president)** and **in 1994 signed a peace guarantee to protect Ukraine's borders, with the UK and USA**. Many of us were worried that this was a recipe for a future





***Novosti news:  
January 1992  
Ukrainian nuclear  
warhead  
disarmament  
begins to ensure  
the peace of Ukraine***



GREUTE  
SS-19 nu  
at a milit  
capital K  
the rock  
been ser




world war should Russia's attempt at reform fail, leading to a decision to rebuild the USSR starting with the biggest component outside Russia, i.e. Ukraine. **At the same time, Boris Yeltsin and the Russian nuclear labs were producing a new generation of tactical nuclear weapons to counter and cancel US conventional weapons, according to a secret-classified 2000 CIA report** (linked [here](#)). "During Putin's mobilization announcement, he[Putin] also threatened to use nuclear weapons in Ukraine, baselessly accused Western countries of provoking him with "nuclear blackmail," and said his remarks weren't a bluff. Russia has the world's largest nuclear arsenal, equipped with both tactical nuclear weapons as well as strategic nuclear weapons, which would be used against cities. "Russians that I keep in touch within Russia are convinced he's going to go nuclear," [ex-CIA agent] Baer told CNN. "I don't know how well-connected they are, but this threat — it was a threat initially — but the more trouble he's in, the more likely he's going to use nuclear weapons"." - **Business Insider, 27 September 2022, Ex-CIA officer says Putin is 'completely cornered' and the chances of his using tactical nuclear weapons in Ukraine are increasing 'by the day'**. "The US and its allies would eradicate Russia's military troops in Ukraine and sink its Black Sea fleet if Vladimir Putin uses nuclear weapons, said former CIA director David Petraeus." - **US would destroy Russia's entire army if Putin use nukes in Ukraine, says former CIA director, The Independent, 3 October 2022**. Nobody believes Petraeus because Putin has already made clear he will start off with a **Fourth Protocol** style false-flag (contrived) nuclear attack on a Russian supply dump or whatever in Ukraine, pretend that is an enemy attack, and use that as a basis to "retaliate" using nuclear weapons. **This is actually a very old diplomatic "fog of war" tactic, which President Kennedy's brother Robert referred to as "sinking the Maine again", in a taped discussion on 16 October 1962, when he considered it during the Cuban Missiles Crisis as a possible false-flag "justification" for invading Cuba to remove those Russian nuclear weapons.** (The USS Maine was sunk, supposedly by a Cuban mine, in Havana Harbor on February 15, 1898, and was used to "justify" the American war with Spain in April.) As a pretext for war, this doesn't matter a dime from the perspective of whether the West believes it. It's just about creating an iota of doubt to enable it to violate agreements. Similarly, Russia has never admitted the lethal attacks with Po-210 (UK, 2006) or Novichok (UK, 2018). It's not about whether the West believes any of it. It's purely about Russian bureaucracy. The more evil there is, the more fake justification. (The Nazis were also obsessed with generating fake justifications by diplomatic bureaucracy to excuse genocide and invasions; this always seems to be about trying to go down in history as holier-than-holy.)



"A boy from the Moscow outskirts, born on the social cataclysms of the year, Yevgeny Zababitskiy, a quarter of a century - from 1960 to 1984, was the leader of the second (in time of creation) nuclear center of our country. But the general public, for him was virtually unknown. ... such trains, camouflaged, were a dozen, made up of three special division missile forces. One - in the Perm region, the other - in Kostroma, the third - under the Krasnoyarsk. ... the "Scalpel" under the car roof is a separable ten warheads of individual guidance. The power of each - 550 kilotons in TNT equivalent. All together, so - 5.5 megatons. We are not going to specify what the missiles were aiming at and what they could do in powder."

- <https://en.topwar.ru/107278-tam-gde-zatochili-skalpel.html>





# ГЕРОИ АТОМНОГО ПРОЕКТА

Герои атомного проекта. — 2005  
Heroes of the atomic project. — 2005

**Юрий Николаевич Бабаев =**  
**Yury Nikolaevich Babaev**

Социалистического Труда с вручением ордена Ленина и золотой медали «Серп и Молот». Он лауреат Сталинской (1954) и Ленинской (1958) премий, награжден орденами Ленина (1951, 1959, 1960), Трудового Красного Знамени (1954), Красной Звезды (1945) и орденом «Знак Почета» (1944).

И. И. Африкантов принимал активное участие в общественной жизни города и области: с 1967 г. был депутатом Верховного Совета РСФСР, избирался делегатом 22-го съезда КПСС. В повседневной жизни Игорь Иванович был великолепным собеседником: его энциклопедические знания в различных областях делали его практически своим человеком в любом обществе. Колоссальные нагрузки физического и морального плана серьезно поворачивали его здоровье, поэтому все свободное время он проводил на природе с семьей. Увлекался фотографией, и в этом увлечении добился профессионального мастерства.

В настоящее время ОКБ машиностроения носит имя Игоря Ивановича Африкантова.

**Бабаев**  
Юрий Николаевич



Бабаев Ю. Н. родился в Москве. В годы войны семья Бабаевых была эвакуирована сначала в Челябинскую область, затем в Среднюю Азию, в г. Ленинобад (ныне г. Ходжент). Холодные и голодные годы Бабаев пережил школьником. И это не мешало ему отлично учиться, за один год освоить программу 8-го и 9-го классов. В 10-м классе он учился уже в Москве. Затем поступил на физический факультет МГУ, который окончил в 1950 г. с отличием.

В начале 1951 г. Юрий Николаевич как лучший студент был направлен в КБ-11 (ВНИИЭФ, г. Саров). Работать начал в лаборатории А. Д. Сахарова. Участвовал в разработке первой водородной бомбы за что ему было присвоено звание лауреата Сталинской премии. Очень быстро прошел путь от старшего лаборанта до заместителя начальника отделения.

## ГЕРОМ АТОМНОГО ПРОЕКТА

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#### Translation from Russian to English

*ABOVE: useful entry about Babaev's design work on Russian thermonuclear weapons in the 2005 Russian book, Герои атомного проекта (Heroes of the atomic project), with side by side Russian and English text translation (since this is important to establish as hard fact beyond any doubt, for the record): "In 1961-1962, Yuri Nikolaevich (Babaev) and his colleagues developed new, more advanced charges. Most of these charges are still in service with the Russian Army. For his participation in the development of a number of thermonuclear charges with high specific characteristics, Yu. N. Babayev was awarded the title of Hero of Socialist Labor in 1962 with the award of the Order of Lenin... Under the leadership of Yu. N. Babayev, new nuclear and thermonuclear charges of various values were developed in subsequent years to equip most branches of the Armed forces of the USSR. ... The further direction of Yu. N. Babayav's work was the radical improvement of nuclear charges - a dual approach. ... Such thermonuclear charges*

Yu. N. Babayev was the largest specialist in the and thermonuclear charges. In 1955, together with Trutnev, he formed a new direction in the creation of thermonuclear charges with radically improved characteristics. The experimental testing of the first row of a new type was successfully completed.

This work was preceded by extensive theoretical and physical justification and mathematical calculation of various processes, which were still largely unclear. Tasks were formulated for the development of new programs for calculations. For the creation of a new direction and the development of thermonuclear charges in 1959, Yu. N. Babaev was awarded the Lenin Prize laureate.

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Under the leadership of Yu. N. Babayev, new nuclear and thermonuclear charges of various values were developed in subsequent years to equip most branches of the Armed forces of the USSR. He repeatedly participated in the tests of these charges on the test grounds of the Ministry of Defense as a specialist and as a leader. His contribution to the development of charges is invaluable.

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Ю. Н. Бабаев внес колоссальный вклад в развитие теоретических двумерных программ, что способствовало созданию математического аппарата. Его деятельность была мощным стимулом для развития расчетов сложнейших математических задач и физических процессов. Он много работал в смежных областях. Занимался лазерной тематикой: накачкой лазеров от ядерного взрыва. Интересовался он и биологией, влиянием радиации на человека и окружающую среду. Были у него и предложения по выведению в космос аппаратов военного назначения.

Ю. Н. Бабаев вырастил большую плеяду молодых ученых, кандидатов и докторов наук, которые сегодня успешно продолжают его дело.

В 2000 г. по завершении одной из разработок, в которой Юрий Николаевич принимал непосредственное участие, ему была присуждена Государственная премия РФ (посмертно). Он награжден двумя орденами Ленина, орденом Трудового Красного Знамени, медалью "За трудовую доблесть".

At the initiative of Yu. N. Babaev and Yu. A. Tрутнев , thermonuclear charges for n economic chains were developed at VNIIEF - i with minimal scoping radioactivity. Some of them used to create reservoirs, extinguish gas flares, li gas and oil fields, etc.

A lot of theoretical work was carried out by nuclear explosions for the development of fissile

The further direction of Yu. N. Babayev's wo improvement of nuclear charges - a dual approach was developed, calculation methods were impro thermonuclear charges were simpler in design a technology . They were tested, but they did not al required fine-tuning, but Yuri Nikolaevich did not

Yu. N. Babaev made a copossal contribu of theoretical deumeric programs, which contrit of a mathematical apparatus. His activity was a p the development of calculations of the most problems and physical processes. He worked was engaged in laser subjects: pumping laser fr He was also interested in biology, the effect , and the environment. He also had proposals for vehicles into space.

Yu. N. Babayev has raised a large galaxy of yc and doctors of sciences, who today successfully

In 2000, upon completion of one of the de Yuri Nikolayevich took a direct part, he was awa of the Russian Federation (posthumously). He v Orders of Lenin, the Order of the Red Banner "For Labor Valor".

*were simpler in design and manufacturing technology."* (Tip: to translate Russian to English from a low quality image scan, upscale the image of the text with [Zyro](#), and then translate the result using [Yandex translate](#).)

ЕВГЕНИЙ АВРОРИН

555



EVGENY AVRORIN

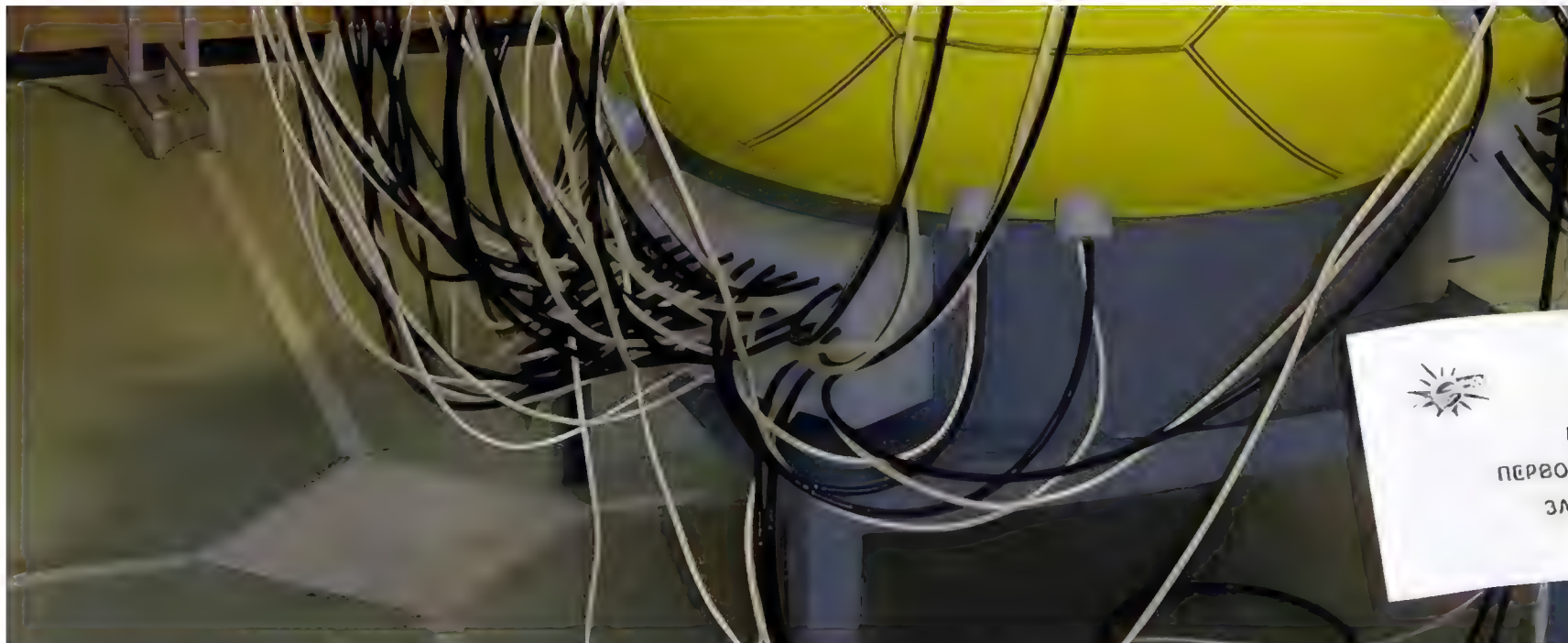














**The thermonuclear charge to equip the first domestic intercontinental ballistic missile (ICBM) R-7. The charge had a capacity of 3 megatons of TNT equivalent. The length of the rocket is 31.4 m. The range of the rocket was 8500 km. It launched Sputnik 1957 and the Vostok-1 spacecraft piloted by Gagarin in 1961.**



**The thermonuclear warhead for the first R-36 ICBM was tested in 1962 with a yield of 2 Mt. The range of the missile was 12,000 km.**



**Temp-S operational tactical missile. The length of the missile is 12.3 m. The power is up to 300 kt, the range of the missile is 900 km.**

**SOURCE: <http://www.vniief.ru/about/museum/excuse/4edbf100497d7a42b9a3bb971ecf5820>**

























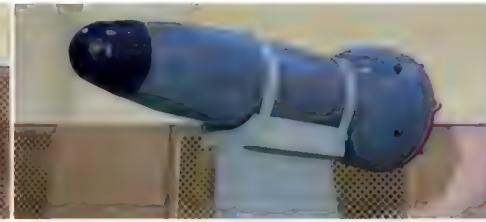


**1st ever Russian MIRV warhead, 210 kg each; first put into service in 1978.**



**Monobloc head**

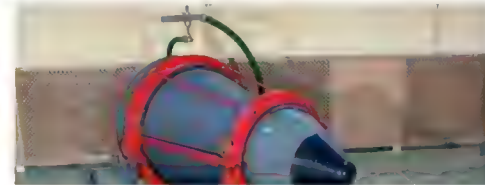
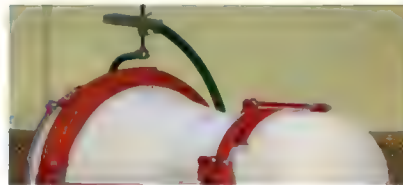
**Russian 370 kg thermonuclear warhead for missiles, put into service in 1978.**



**1st Russian MIRV for SLBM submarine missiles, put into service in 1974: mass is 170 kg, a small-sized thermonuclear charge allows placing three warheads on one launch vehicle**



**Monoblock head: 406 kg, entered service in 1974.**









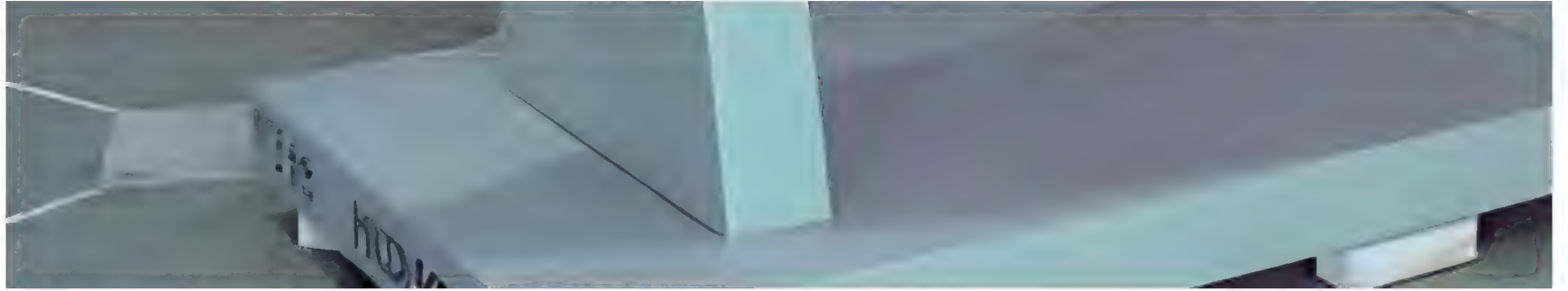








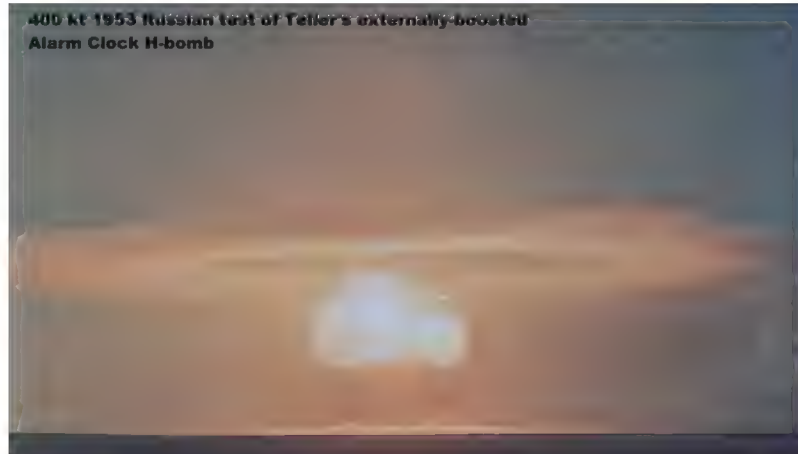






**400 kt Alarm Clock 1953 H-bomb (Teller's 1947 design, an externally-boosted implosion bomb)**

























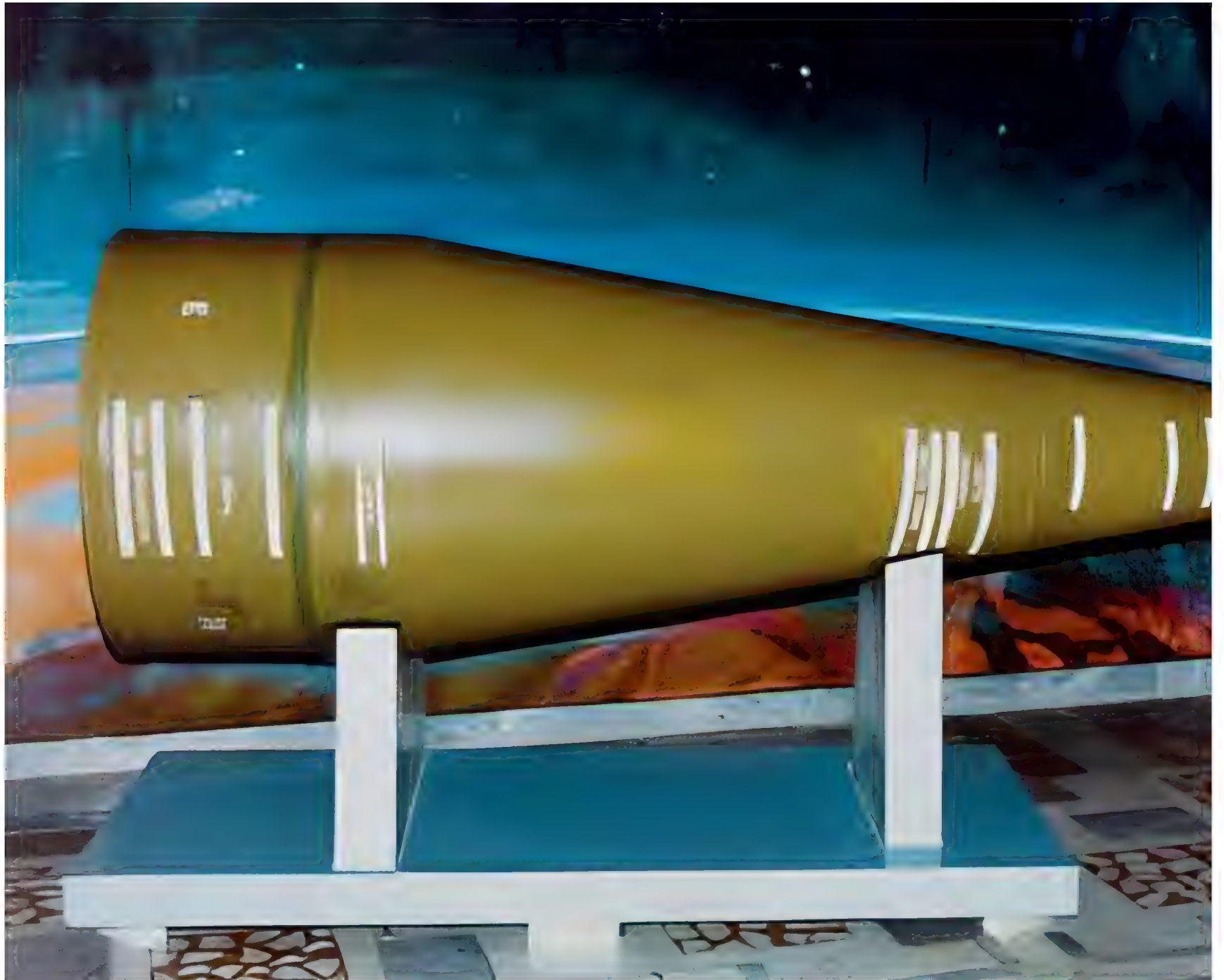


























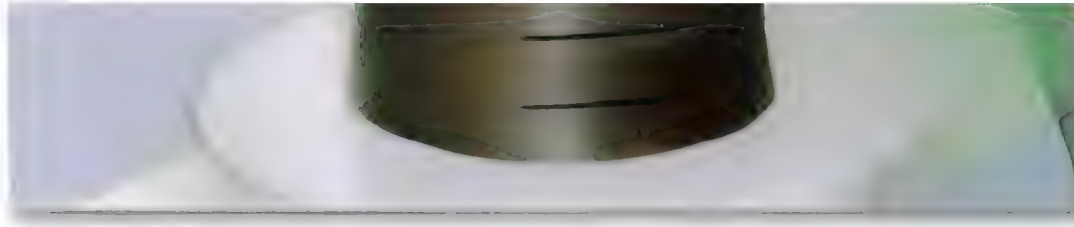


















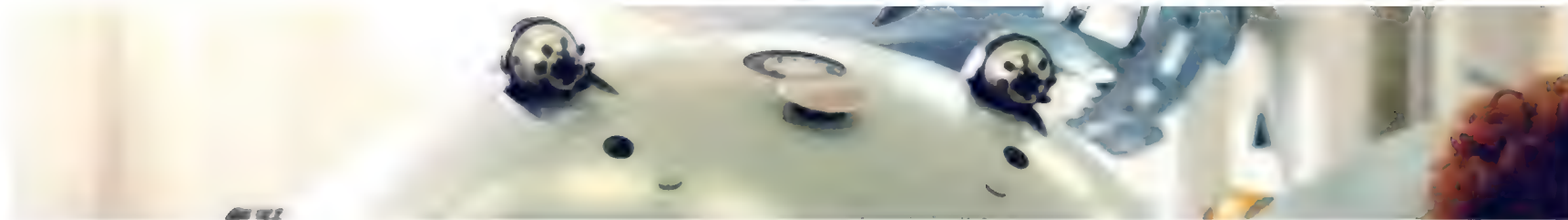


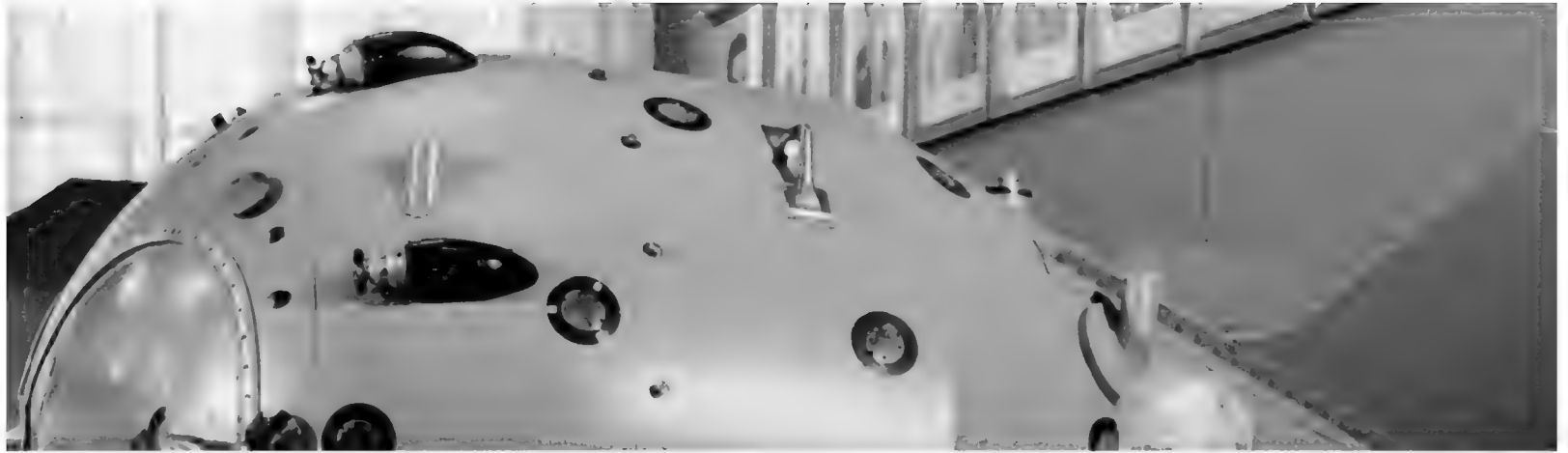
**1949 design (courtesy of Dr Fuchs, David Greenglass, et al.)**











































*ABOVE:* the precise nature of Putin's nuclear threat, photos from **both the Russian nuclear weapons labs museums** (older stuff is in Sarov, but the latest Russian very small MIRV warheads whose shapes reveal design data are in the **RFNC-VNIITF Museum at Snezhinsk including the pink painted warheads which are not in the Sarov collection**). The first two-stage 1.6 megaton yield Russian thermonuclear weapon, tested in 1955, RDS-37, had a spherical secondary (fusion) stage which required isotropic compression (unlike early American cylindrical designs). The Russian design omitted the plastic foam used to fill the radiation channels in the early UK two stage warheads (and modern W87 and W88 etc.) to deliver x-rays isotropically to the secondary stage. Instead, the Russian design used *precise geometric mirroring of x-rays by a large (1.5m diameter) ellipsoidal (prolate spheroid) shaped case, with the fission primary at one focus and the secondary stage at the other* (legendary Russian thermonuclear warhead designer Yuri Trutnev has confirmed this use of a lead lined case, a reasonably effective x-ray mirror - it isn't a perfect mirror since the "reflection" is accompanied by a lot of absorption of radiation - in the RDS-37 and later designs, with low-density material merely used as an x-ray absorber as a surface covering on the spherical secondary charge and not as a radiation channel filler - as discussed later in this post, below). This design - *without plastic foam filling the radiation channel* - was first used by America a year later, as the Egg device tested during Operation Redwing shot Huron (discussed and illustrated later in this post). It has its advantages: faster and more efficient compression with less risk of neutron pre-initiation of fissile materials in the secondary stage, since x-rays are slowed down by plastic foam, but travel faster than neutrons if simply reflected from the case. Therefore, when using the outer case as an x-ray radiation mirror, the speed of delivery of the x-rays to the secondary (to compress it) is faster than the speed that neutrons can arrive, so you don't need a neutron interstage barrier the way you do for devices employing a plastic foam filling, which slows down the x-rays delivery time and allows more neutron fission in the secondary to occur before full compression by x-rays.

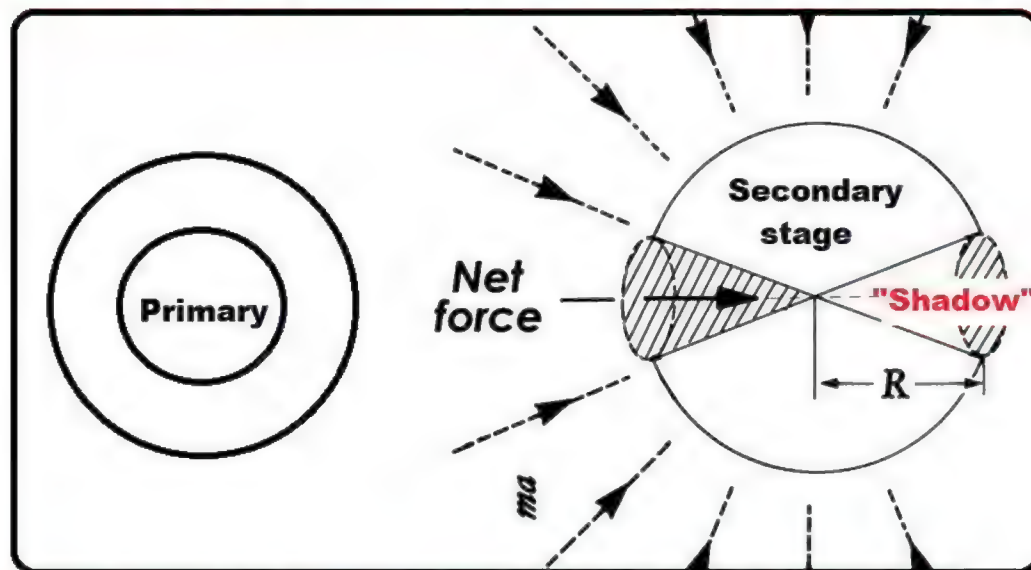
Anything large in the case which creates x-ray "shadow" zones increases anisotropy of x-ray delivery to the secondary stage. This problem doesn't exist for the early American cylindrical stages, where the compression geometry is simply axial symmetry, i.e. radial compression in 2, not 3 dimensions. (To double the density of the secondary, radial compression of a cylinder requires a 29.3% reduction in radius, compared to just a 20.6% reduction of radius for spherical compression to achieve similar doubling of density.) But this outer case x-ray mirroring also has the disadvantage that the overall diameter of the outer radiation reflecting case must be *large in comparison to the diameter of the spherical secondary charge* (at least several times larger), or you do not get a sufficiently isotropic compression of the secondary stage (i.e. similar compression from all directions), because if the case is too small, the finite size of the secondary stage itself blocks reflected radiation from hitting it on the opposite side to that in proximity to the primary stage, which reduces compression, efficiency, and yield. *This is just a simple shadowing problem that you can see in a room lit by daylight from a window. If you place a large object in front of the window, it creates a shadow behind it, so it is not isotropically illuminated (i.e. lit equally on all sides). If you place a smaller object in front of the window rather than a huge object, this shadowing problem is reduced or even eliminated because enough light can get into the room around the object, to be reflected back on the far side of that object by the walls of the room - particularly if you have mirrors on the walls - since the mirrors can then reflect light back so that the object is illuminated more uniformly on all sides (isotropic exposure, as opposed to anisotropic - unequal - exposure of all sides; for a diagram illustrating a suppressed example of the effects of a certain kind of fascinating anisotropic radiation exposure, please - for example - see my very brief 1-page long PDF paper linked here!).*







### Anisotropic (unequal from all directions) x-rays on 2nd stage:



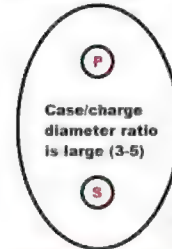
**Second stage is not uniformly compressed due to x-ray shadow on side furthest from primary stage. Solutions: (1) put a partial shield between the two stages to try to "level up" the x-ray exposure on each side, (2) use foam to slow down and diffuse the x-rays to a uniform concentration everywhere in the case (even on the far side), (3) use a huge case that focusses x-rays uniformly.**

ABOVE: illustration of the problem of the anisotropic x-ray exposure of the secondary stage and some of its possible solutions, namely fill the case with foam to slow down and diffuse the x-rays to a uniform concentration everywhere in the case (a terrible idea for several reasons, e.g. it reduces recoil ablative impulse, allows neutrons time to arrive and pre-detonate any fissile material in the secondary stage, and it means the outer case has to hold the whole thing together for longer while the fusion burn hopefully starts, but this is nevertheless still

used in Western devices), make the case huge so you can reflect x-rays more uniformly on to the far end (right side above) of the secondary stage, use two primaries - one on each side of the secondary stage - as Russia does still, or design an "interstage" shield to go between the two stages above to try to even-up the exposure on each side of the secondary stage (but be careful to design it well, or you will over-shield the secondary and it won't get compressed at all!). The 1958-tested double primary Russian solution has the genius that easy to design: you don't need to bother to make careful design calculations at all!

Use of foam in modern warheads to minimise outer case size for spherical secondaries

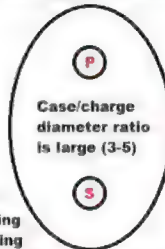
1.6mt RDS-37, 1955:



Russian 1955 test

Both efficient but too big for ICBM, due to case mirroring for isotropic compression; not foam

250kt Egg (Huron), 1956:



American 1956 test

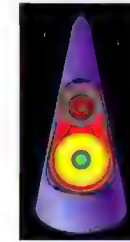
X-ray mirroring by casing

Megaton Grapple's



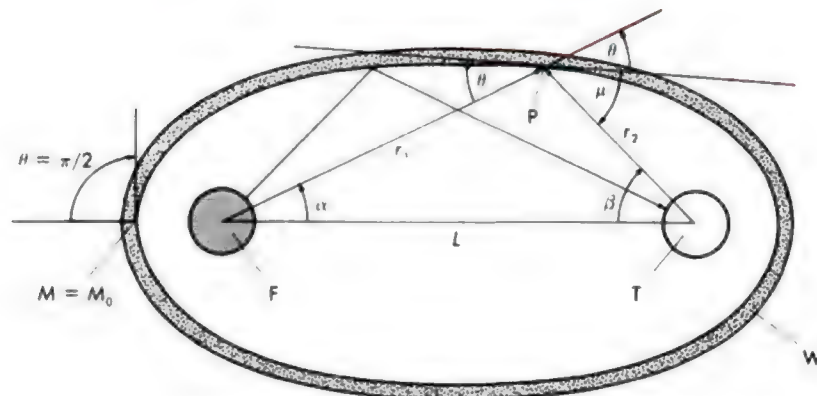
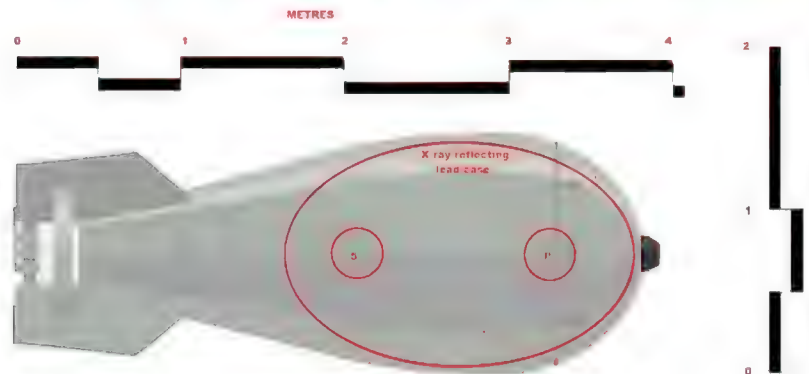
UK 1957-58 tests

Foam allows isotropic x-ray compression with a SMALL ratio of case/charge diameter!

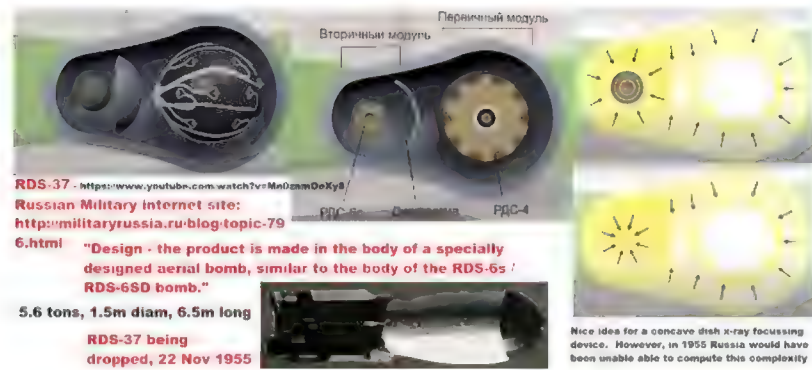


Modern warhead using foam filling

## RDS-37: first two-stage Russian H-bomb, 1955

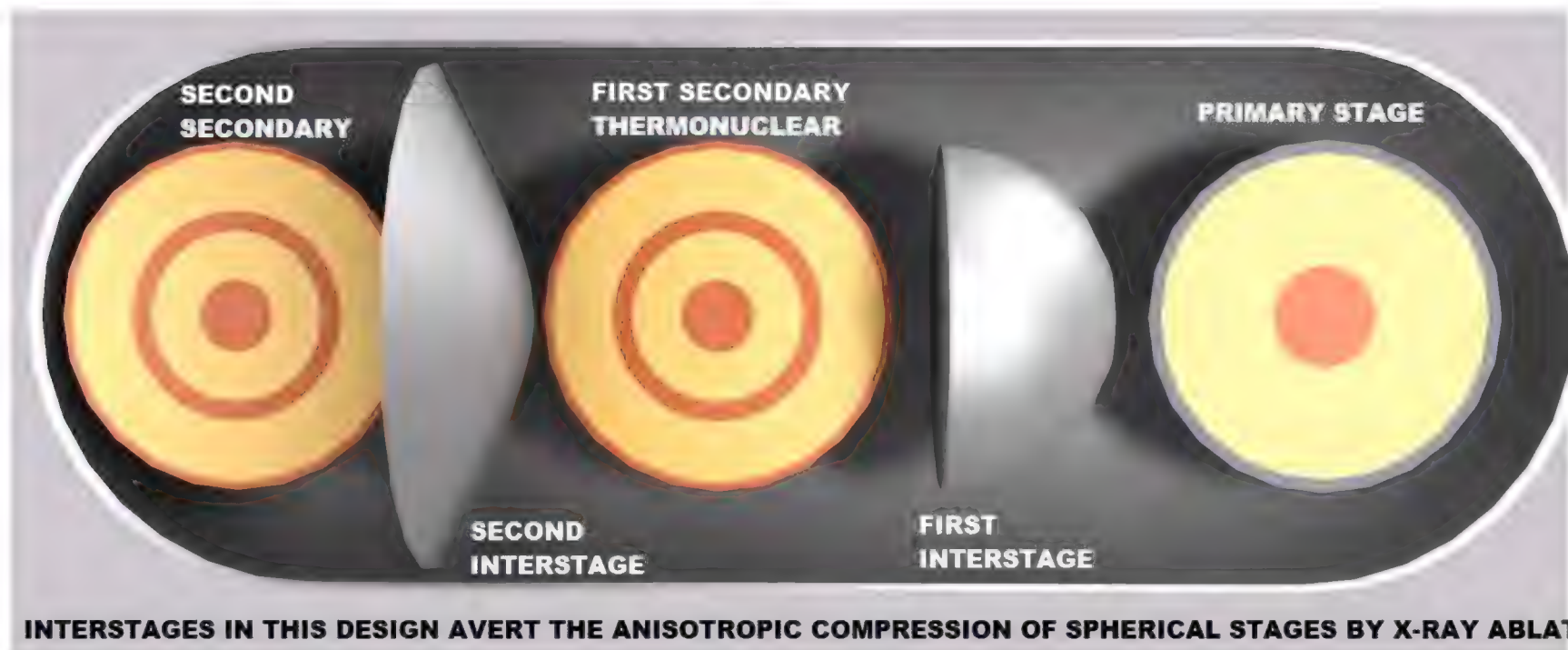






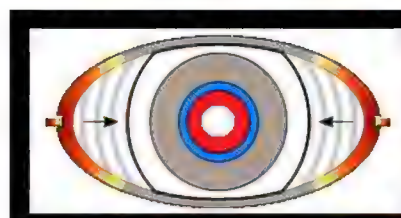
ABOVE: two versions of the RDS-37 first Russian nuclear weapons design. The first shows RDS-37 as the simple prolate spheroid elliptical system for x-ray mirroring, fitted into an RDS-6 case as shown on a [globalsecurity.org](https://www.globalsecurity.org) page (the RDS-6 case was used for the earlier 1953 400 kt Alarm Clock externally boosted device). Actual film from the 22 November 1955 test of RDS-37 show a longer bomb, probably with an added parachute to slow the bomb down while the delivery aircraft escapes (the 1953 RDS-6 test, unlike RDS-37 in

1955, didn't need a parachute, as it was a near surface burst). **The second illustration is from a Russian language source (Military Russia, Бомба с зарядом РДС-37) showing a slightly different variation in which there is a very clever concave shield used between primary and secondary stages to try to achieve uniform (isotropic) irradiation of the spherical secondary stage with x-rays.** The source given is not a declassified report but a **Russian youtube video**. The problem is that this convoluted design, while simple to draw, is very complicated to design in terms of calculating the sizes and shapes of the various elements for optimum performance, requiring 2- or 3-d simulations by computers unavailable at the time, even in America. It is more likely to be the basis of the 500kt two-stage single primary devices developed in 1958 and used in the 50mt Tsar Bomba (discussed and illustrated later) than the first 1955 test of a two-stage device. The difficulties with the isotropic compression of spherical devices was a key reason why early American bombs had cylindrical secondaries with just radial compression not isotropic compression; they are far more straightforward for design calculations, because you don't have to worry about how to get radiation to the far side of a sphere! In other words, you don't need 3-d calculations. The simpler prolate spheroid case, with primary and secondaries at the two elliptical focii, is easier to analyze mathematically without a computer using straightforward geometrical considerations (cf. **Winterberg's 1981 book *Physical principles of thermonuclear explosive devices*, Fig. 4 on page 28 and discussion of x-ray mirrors on page 32, as shown later in this post**), and thus more likely what was tested in 1955. This is because there is less to go wrong, and it is easier therefore to get a definite result if the design has an error; whereas, if you test a design with *lots of innovations, and it fails, you learn nothing because you don't know which of the many factors caused the failure* (it is not even the case that you know that *one* thing has gone wrong, which can be discovered by elimination after many changes and tests, because there could be *several different design failure causes all working together, in a radical product* with lots of innovation!). The same youtuber also has a **video** of the design of the 50Mt Tsar bomba which is also incorrect, showing a more modern device with a single primary stage (completely debunked below in this post, since that 50mt bomb was provably set off by two 500 kt thermonuclear charges). In both designs above, the overall bomb case diameter is at least three times the diameter of the secondary charge, which is necessary to prevent an x-ray shadow on the side of the secondary furthest from the primary stage, resulting in anisotropic compression.



**Double secondary design tested by UK during Operation Grapple Z3 (800 kt) on 11 September 1958 at Christmas Island**

**Komodo 2-point primary, Type 126 pit**



**(Primary has 4.5" small axis diameter)**

**W88 schematic. 475kt. Built in 1980s, taking 14 nuclear tests in Nevada.**

**Beryllium**



**Cursa 7" diameter secondary**

*ABOVE:* cartoon-style (non-blueprint) sketch of the problems of designing the interstage to stop neutrons from the primary stage from pre-detonating and deforming the fissile U235 (or alloy) in the secondary stage, while x-rays are diffusing (relatively slowly, compared to x-rays in a vacuum) through the foam shown in blue, to allow isotropic compression of the secondary stage.

This requires detailed 3-d computer simulations and nuclear tests for

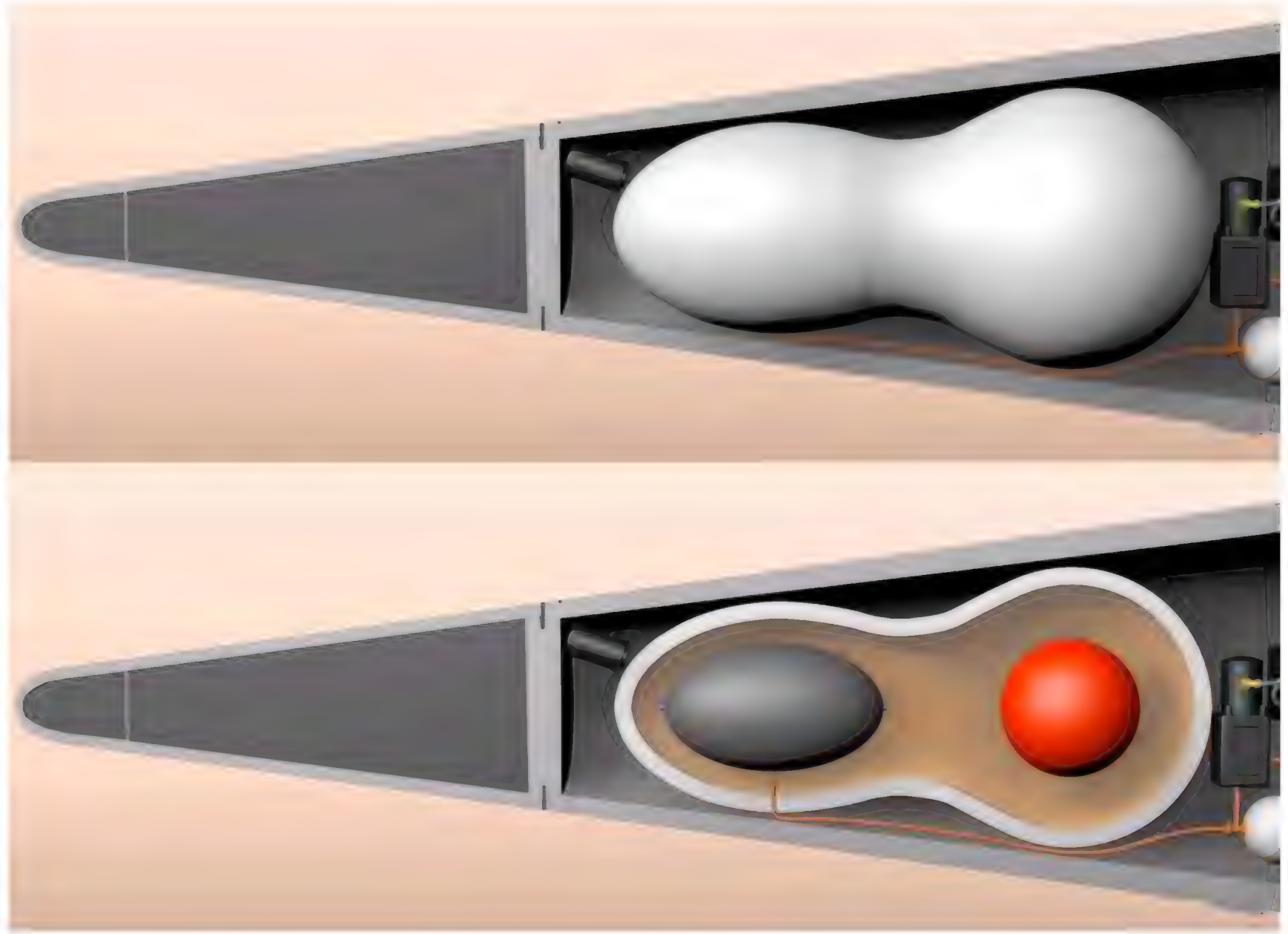
verification, and is very difficult design engineering to get right. Traditionally, the light weight interstage has been beryllium, a toxic brittle material, for its transparency to x-rays and opaqueness to neutrons, while not being excessively heavy for a missile payload. There has been a recent effort to replace the toxic, brittle beryllium interstages with safer, more durable interstages made of alternatives like

boron, cadmium and lithium. (For aircraft delivery, where weight is less crucial than for missile warheads, U238 can be used as the neutron shield. But if weight is not an issue, you could simply have a clean secondary stage, comprising of Li6D and lead or tungsten pusher, without any fissile material, so then you don't need a neutron shield interstage!) But the more fissile or alloy there is in the secondary stage of a W88 warhead, the closer it is to criticality, so the greater the complexity of the design to keep primary stage neutrons from predetonating it, while still allowing sufficient channelling of x-rays. This is a complex design trade-off to get right, requiring sometimes multiple nuclear tests and re-designs, which explains why detailed data is still classified secret. (Not shown in the sketch is a thick neutron shield cylinder enclosing the entire secondary stage to reduce its vulnerability to predetonation by neutrons from defensive nuclear warheads from the Russian ABM system. When such a U238 neutron shield shell is shown in diagrams, it is usually misinterpreted as some sort of tamper or reflector to help the reaction! In addition, the primary and secondary stages are simplified. Fissile material would have a hollow core supplied with D+T boost gas from an external flask, prior to detonation. There is also the external x-box with capacitors that must be charged up with HV from a battery powered inverter prior to detonation, supplying large parallel current pulses to detonators and neutron initiator tubes. These are also safety features, helping to ensure that several stages of preparation must be undertaken in order to achieve a full-yield detonation, so the weapon is relatively safe in an accidental fire or impact.)

One of the biggest secrets of thermonuclear weapons became clear from the "clean" H-bomb research at Operation Redwing in 1956; the Zuni (15% fission, 3.53mt total yield) and Tewa (87% fission, 5.01mt total yield) were basically identical designs, but U238 in the Tewa device was replaced with lead in Zuni, and Zuni was topped up with extra Li6D to try to compensate. As the results showed, although fusion is on paper more efficient than fission, in reality it was not possible in that design to get as much yield out of the cleaner device. In other words, in the dirty design, the fusion stage is just used as an external boosting tool to release high energy neutrons to fission U238, which produces most of the yield. An exception to this is the more efficient pusherless pulse-shaped isentropic compression system tested in the Ripple II device in 1962, discussed later, where it is claimed by its designer Nickolls that a higher efficiency of thermonuclear burn was achieved than in pusher devices (this isn't reflected in the overall yield/mass ratio of the entire device, which was just a prototype; we're talking just about the yield/mass ratio of the fusion capsule in Ripple II, not the entire prototype bomb whose mass is not relevant to a final warhead system).

"To form the direction of energy transfer, at the suggestion of A. D. Sakharov, the [1.6mt RDS-37] primary and secondary modules were enclosed in a single shell, which had a good quality for reflecting X-rays, and measures were provided inside the charge to facilitate the transfer of X-rays in the right direction. Yu. A. Trutnev in the course of this work proposed a method for concentrating the energy of X-ray radiation in material pressure [*a low density x-ray absorbing layer around the secondary stage, discussed later in this post with quotations from Trutnev himself about it*], which made it possible to effectively carry out radiation implosion. During this development, he also proposed a method that determined the predictability of the configuration of channels for the transfer of x-rays, which later found wide application in two-stage thermonuclear charges. ... In this case, the problem of ensuring spherically symmetric compression of the secondary module was radically solved, since the time of "symmetrization" of energy around the secondary module was much shorter than the compression time of this module. ... The fact is that the overall mass parameters of the RDS-37 charge and the first samples of thermonuclear charges of the USSR that followed it and the first thermonuclear charges of the USA are fundamentally different. The characteristic value of the ratio of length to diameter of the first thermonuclear charges of the USSR is less than 2, and for the first thermonuclear charges of the USA it is 3.2–4.8. This difference indicates fundamental differences in the structure of the secondary modules of the first thermonuclear charges of the USSR and the USA. The thermonuclear charge modules of the USA had a cylindrical





configuration, while the thermonuclear charge modules of the USSR had a spherical configuration." - I. A. Andryushin, A. K. Chernyshev, and Yu. A. Yudin, Creation of the first samples of thermonuclear weapons, [http://wsyachina.narod.ru/history/coretaming\\_5.html](http://wsyachina.narod.ru/history/coretaming_5.html) (deleted

site, but available now on Wayback Machine at

[https://web.archive.org/web/20130515010737/http://wsyachina.narod.ru/history/coretaming\\_5.html](https://web.archive.org/web/20130515010737/http://wsyachina.narod.ru/history/coretaming_5.html)).

In the sense the Russians I. A. Andryushin, A. K. Chernyshev, and Yu. A. Yudin (above quotation) argue, that America first tested thermonuclear weapons with cylindrical "pipe" secondaries whereas Russia was straight-in with the spherical secondaries now used in compact MIRV warheads, Russia seems to have been ahead in the 50s. The Russian design of 1955 was essentially duplicated by the American Egg design (Redwing-Huron) of 1956. But it was bulky because to get isotropic compression efficiently of a sphere using radiation mirroring from the inside of a prolate spheroid reflecting case, the case needs to be at least 3-5 times the diameter of the secondary stage (unlike getting isotropic compression from plastic foam, where you just need a few cm wide radiation channel!). So Russia wasn't ahead, unlike Britain which in 1957-8 successfully used spherical secondaries (like Russia), but with plastic foam in the radiation channel (unlike Russia) *to make the secondary stage compression isotropic while reducing the outer case size to a minimum*. If you just use the outer case as a mirror (as the Russians Ya. B. Zel'dovich, Yu. A. Trutnev, and A. D. Sakharov did very successfully with their 1.5m diameter RDS-37 in 1955, and the Americans did with their Egg device in the Redwing-Huron test of 1956), and don't instead use foam to fill the case to absorb and re-radiate x-rays isotropically, you will always need a *REALLY HUGE DIAMETER* outer bomb case for the geometry to work efficiently! This is due to the immutable mathematical laws of geometry. So although they were able to use a single primary stage with success in 1955, they had a huge problem with trying to miniaturise that design without going back to fission bomb yields.

There were only three possible ways to change their design to get their huge 1955 H-bomb small enough physically to fit into the warhead of an ICBM: (1) change the shape of the secondary to the simpler to compress geometry of a cylinder, where you ignite the end closest to the primary stage and then an auto-catalytic self-burning wave is hopefully initiated (as used in the early 1952 American Ivy-Mike test), but the Russians had already investigated and discarded Teller's original Superbomb "pipe" (the Russian word for it); (2) fill the radiation channel with plastic foam to make the energy delivery isotropic to the secondary, but this is less efficient since the x-rays are delivered more slowly than by simple case reflection (through having to be repeatedly absorbed and re-radiated in a mathematical "drunkard's walk" going in all directions by the electrons in the foam), and this x-ray energy delivery delay also allows neutrons to arrive and partly melt down, expand and pre-detonate any fissile materials in the secondary stage (unless you have an efficient neutron shield or interstage between the primary and secondary stage, which is hard to design effectively without good electronic computers, which the Russians then lacked); or finally (3) use *linear-implosion* of the final fusion stage, by using *TWO* primary stages, one on each side of the fusion stage, within a cylindrical casing, wired in a simple parallel circuit for simultaneous detonation. Linear implosion is never the most efficient solution, but it is necessary to get a very small diameter thermonuclear weapon for a ICBM warhead. So it turns out that the Russians use a very different approach to compact nuclear warheads than America and Britain. Yuri Trutnev in 2017 explained the details (this has now been deleted from the Russian site):

"... Avraamy Zavenyagin ... said - take a thermonuclear charge, surround it with atomic charges, blow them up at the same time, they will squeeze it. ... This idea was later developed by our theorist Viktor Davidenko. In fact, he proposed a scheme for the so-called two-stage charge - a casing in which there were spatially separated atomic and thermonuclear units. The explosion energy of the primary atomic stage would be used to ignite thermonuclear reactions in the secondary stage. Our outstanding specialists Yakov Zel'dovich and Andrei Sakharov had great hopes for this scheme of so-called nuclear implosion. ... I did a lot of work on the theory of the efficiency of atomic

charges. I knew that when they explode, a lot of energy comes out in the form of x-rays. And I began to think about how to make it so that *the thermonuclear charge is overlaid with a light substance - "coating", these can be chemical elements with a low number, having very good thermal conductivity, and with the help of X-ray radiation from the explosion of the primary atomic charge "coating" heat up. At the same time, its substance would evaporate outward, towards the radiation, and as a result, as during the movement of a rocket, a reactive impulse would be created, directed into the secondary charge* and creating the pressure necessary for effective compression of the thermonuclear "fuel". *But how was it possible to ensure a uniform, symmetrical effect of radiation on the spherical surface of a thermonuclear charge with a "coating"? Here I am stuck. ... Zel'dovich proposed exactly how to direct X-rays, Sakharov showed that this radiation is not absorbed by the walls of the casing, but remains in it, and therefore a uniform effect on the surface of the thermonuclear unit can occur. And my idea is a "coating" of a light substance to transfer radiation to the required pressure.* ... I already had another idea in my head - a more advanced product based on a new principle for designing a thermonuclear charge. After testing the RDS-37, the next day in the evening I called my friend and colleague Yuri Nikolaevich Babaev to the bank of the Irtysh and said: "Yura, let's try to do just such a thing." And he agreed. We returned to Sarov and drew a charge diagram and proposed it. This product received an index of 49. I will not say what it is. Product 49 is similar to the RDS-37, but not in everything. They started laughing at us, this is all nonsense, nothing will work out for you. In short, they didn't support us because they didn't understand. ... We were supported by Igor Vasilyevich Kurchatov. The test of product 49 took place on the Day of the Soviet Army, February 23, 1958 at the test site on Novaya Zemlya. The success was very big. In 1958, several tests of products of different capacities based on the 49th charge took place. He went into a series, he was put on rockets, and this was already the basis of our country's thermonuclear weapons. ... I said to Khariton: "Yuli Borisovich, let's make a 100-megaton charge. Maybe then the West will understand that it would be pointless for them to increase their megatonnage further." He agreed. But here, for safety reasons, we also made a half-power charge, replacing the uranium-238 stage with lead. ... The Americans understood that they would not frighten us, but we would frighten them. And they lowered the power in their trials. We could have done more, but what's the point?" - Yuri Trutnev, *The creation of nuclear weapons is a special kind of creativity*, ria.ru/20171122/1509304656 22 November 2017 (this page has now been deleted, but is available on Wayback Machine at <https://web.archive.org/web/20220429180233/https://ria.ru/20171122/1509304656.html>)

To get small thermonuclear warheads for missiles, after successfully testing a compact linear implosion primary stage for nuclear artillery (detailed later in this post), at the suggestion of Yuri Trutnev, starting in 1958, the Russians began testing thermonuclear weapons having two compact primary stages, one on each side of a spherical or cylindrical thermonuclear charge, wired in parallel electrical circuit using large krytron vacuum tube switches to get simultaneous detonations and a more uniform compression of the secondary stage. This was because they lacked the computers America and Britain used to design smaller thermonuclear warheads where plastic foam was employed to deliver x-ray energy uniformly to a secondary charge from a single primary stage. Trutnev suggested replacing the two primary stages with two 500 kt thermonuclear weapons to achieve a 50 megaton clean test in 1961. But what is more important is that this whole approach was continued by Russia with more practical weapons, under the leadership of Yuri Nikolaevich Babaev (1928-86):

**"Yuri Nikolaevich Babaev became one of the main creators of the world's largest detonated bomb ("Tsar Bomba") with a capacity of 50 megatons, tested at the test site on Novaya Zemlya on October 30, 1961. ... In the future, the efforts of Yuri Nikolaevich Babaev focused on the fundamental improvement of thermonuclear charges, for which he developed the theory of "double approach". - [http://www.biblioatom.ru/founders/babaev\\_yuriy\\_nikolaevich/](http://www.biblioatom.ru/founders/babaev_yuriy_nikolaevich/)"**

The use of two primary stages (or two whole thermonuclear devices, for higher yields) to compress a fusion capsule inside a narrow tube casing without plastic foam to make the radiation isotropic is like a linear implosion system for fusion charges: the central (main) fusion charge will be most compressed along the axis of the bomb than from the sides, so it can be elongated so that it becomes a sphere when compressed (below). This is avoided in US and UK weapons by the use of computer designed low density baffles of plastic foam to make the x-ray energy *isotropically* compress the secondary (the foam doesn't do the compression, the x-ray ablation of the secondary does it; the foam is merely used in modern Western designs to reduce anisotropic compression of the secondary, missed out by the Russian approach which uses two primary stages or two thermonuclear stages for larger devices, instead).





"The A6027 charge was tested on October 30, 1961 at the Novaya Zemlya test site. ... The creation of nuclear weapons by the Soviet Union, despite the hardships of the post-war period, has become an effective factor in deterring any aggressors from launching new global wars [*the aggressor is Russia, fighting democracies in Georgia, Crimea, Syria and Ukraine, eh*]. ... The young theoretical physicist Yu.A. Trutnev proposed the idea of creating a 100 Mt superbomb, which could frighten foreign skeptics who believed that Soviet nuclear

scientists were significantly weaker than American ones [*subservience and slavery to authority is always a weakness compared to free thinking trial-and-error based innovation for profit and to supply customers with the latest products they want and need; the backwardness of Russia in microelectronics for decades illustrates the failure of centralised control most clearly; free countries also have this problem but the people are generally better capable of overcoming the tyranny*]. The idea was supported by Academicians A.D. Sakharov, Yu.B. Khariton and Ya.B. Zeldovich. The top leadership of the country, having agreed on the issue with scientists, decided to create and test super-powerful weapons. The final decision to resume nuclear testing and create a superbomb was made in July 1961, when the scientific leadership of KB-11 (VNIIEF) reported to N.S. Khrushchev on the possibility of developing a hydrogen bomb with a capacity of 100 million tons of TNT. ... [**Copying the USA, which opened a second nuclear weapons lab, Lawrence Livermore, to challenge its first lab at Los Alamos...**] In 1955, by decision of the Government, a second nuclear center was established - NII-1011 (RFNC-VNIITF) in Chelyabinsk-70 (now the city of Snezhinsk), where a third of the employees of KB-11 were transferred. ... After the adoption of the decree of the Government of the USSR on the resumption of testing of nuclear weapons in July 1961, KB-11 began emergency work on the development, theoretical justification and preparation for testing not only superbombs, but also a series of other nuclear weapons. Even before this decision, the theoretical physicists of KB-11 were distributed to develop "their" charges. Therefore, to develop a superbomb, it was decided to call Dr. Ph.D. Adamsky V.B., by connecting to it a theoretical physicist - a recent graduate of MEPhI Yu.N. Smirnov, as well as the initiators of the creation of the superbomb, Ph.D. Trutneva Yu.A. [center of photo below, in front of bomb] and Ph.D. Babaeva Yu.N. Academician Sakharov A.D. took over the development leadership. ...



"The situation was aggravated by the tight deadlines for the start of tests (09/01/1961), the lack of a computer park to carry out the proper number of calculations. I had to use all the computers of the Mathematical Institute of the USSR Academy of Sciences (mathematicians at KB-11 worked there at night and on weekends). And only on October 24 (6 days before the tests) was the final report on the design of the bomb and the theoretical justification completed. But even then A.D. Sakharov (already without a computer) additionally worked out the necessary improvements. A large number of serious innovations were applied in the design of the superbomb itself and its charge. ***A powerful thermonuclear charge was made according to the "bifilar" scheme: for radiation implosion of the main thermonuclear unit, two thermonuclear charges were placed on both sides***

***(front and back) to ensure synchronous (with a time difference of no more than 0.1 μs) ignition of thermonuclear "fuel"***. KB-25 (VNIIA) finalized a serial detonation automation unit for this charge. It seemed to A.D. Sakharov that the calculations carried out on a computer were not enough. 2 days before the product was sent to the test site at 8 pm, Sakharov came to the workshop, approached the

product (the body of the bomb was open and access to the charge was provided from both sides). Andrei Dmitrievich looked inside, felt the construction, then sat down on a chair in the corner ... the academician drew a sketch, ***where it was proposed to install lead belts 60 mm thick from the side of the initiating charges on the inner conical surface of the charge body***. I call the director of KB-11 B.G. Muzrukov at one in the morning: "What should I do, after 36 hours, sending?" Answer: "Do as Sakharov said!" At 6.00 in the morning, the designers draw "squirrels" in the shop and after 4 hours the lead belts are ready (from the memoirs of the head of the assembly shop of the KB-11 plant A.G. Ovsyannikov). After 40 years, when, on the instructions of the director and first deputy scientific director of VNIIEF, Academician of the Russian Academy of Sciences Ilkaev R.I. In the most powerful computer center in Russia, VNIIEF, the calculations for the three-dimensional problem "Mimosa" were checked, it was confirmed that the absence of these lead belts would lead to a significant distortion of the radiation implosion ***sphere*** and a decrease in the explosion power by ~ 80%. So the thought of the academician turned out to be much more perfect than computers available at that time. ... In the history of Russia, a certain pattern was noticed in the creation of hypertrophied samples of unique products: the Tsar Bell (which did not ring), the Tsar Cannon (which did not shoot) and, finally, the Tsar Bomba (which was blown up with some excess of the calculated power - 52.5 Mt). ... only about 2 percent of the energy of the explosion came from the fission reaction, the rest of the energy from the fusion reaction ... The creation and testing of the most powerful thermonuclear charge in the world with a capacity of 50 Mt served as an impetus for reducing the arms race throughout the world. And this is the great merit of our outstanding nuclear scientists. [*In plainer words, Russia succeeded in starting the West on the road from nuclear superiority to arms control parity, allowing the dictatorship to survive longer before going bankrupt.*]" - A.V. Veselovsky, honorary veteran of the RFNC-VNIIEF, head of the scientific and testing department (in 1956-2009), laureate of the USSR State Prize, <http://www.proatom.ru/modules.php?name=News&file=article&sid=3364>



## Yu. N. Smirnov, Academician

A fundamentally new approach was proposed by Yu.N. Babaev and Yu.A. Trutnev. It was a promising proposal in terms of downsizing, increasing power density and what is called miniaturization. It was not about the very small sizes. But now the charges really became weapons: they could be placed on certain carriers. The new charge was successfully tested on February 23, 1958. Within a year, on the basis of this idea, a rather large series of charges of various calibers was designed, including the smallest of them for that period.

Table 2. Heavy-duty nuclear explosions, USSR.

No. p / p (in brackets - the serial number of the test)	Explosion date	Conditions for the explosion	Power, kt	Comments
1(123)	10/23/61	air	12500	
2(130)	10/30/61	air	50000	The most powerful explosion in the world
3(147)	08/05/62	air	21100	
4(173)	09/25/62	air	19100	
5(174)	09/27/62	air	> 10000	
6(219)	12/24/62	air	24200	

Total capacity: > 136.9 Mt

In addition to six super-high power explosions (  $E > 10$  Mt, **Table 2** ), the USSR conducted 22 megaton class air tests (  $1.5 \text{ Mt} < E < 10 \text{ Mt}$  ), which were carried out in the period 1955–1962 . All of them, with the exception of the explosion on November 22, 1955 near Semipalatinsk, were carried out at the Novaya Zemlya test site. **SOURCE: [http://wsyachina.narod.ru/history/testing\\_ground\\_213.html](http://wsyachina.narod.ru/history/testing_ground_213.html) (BEFORE THAT SITE WAS DELETED)**

"After the end of the moratorium in 1961, they returned to the task of creating a superbomb, but now it was a thermonuclear charge with an energy release of 100 Mt, which was to be placed in an aerial bomb developed according to the "202 project". At this stage, the development of a new super-powerful charge was carried out in KB-11 on the initiative of Yu. A. Trutnev and A. D. Sakharova, the team of authors also included Yu. N. Babaev, V. B. Adamsky and Yu. N. Smirnov. Original solutions and accumulated experience made it possible to implement this development extremely quickly, and the charge was successfully tested on October 30, 1961. Among the features of this charge, it should be noted that the large volume of the charge (due to its high energy release), required significant amounts of X-ray energy for implosion. The developed nuclear charges did not satisfy this condition, and therefore, a previously developed two-stage thermonuclear charge with a relatively low energy release [ $\sim 500\text{kt}$ ] was used as the primary source of the "superpowerful charge" [TWO of them, one on each end of the main fusion stage!]. This [ $\sim 500\text{kt}$ ] charge was previously developed by Yu. A. Trutnev and Yu. N. Babaev. ... In 1962 Yu. A. Trutnev and V.S. Lebedev developed a smaller version of the superbomb with an energy release 2.5 times less than the 1961 version. The reduction in energy release and overall mass parameters made it possible to count on equipping a heavy ICBM with such a charge. The charge was tested in a non-full-scale version using passive materials [*lead* ablator/pusher and case lining] that

significantly reduced (as in the 1961 test) the release of radioactivity in the test explosion." - I. A. Andryushin, A. K. Chernyshev, and Yu. A. Yudin, *Development of the nuclear weapons program of the USSR*, [http://wsyachina.narod.ru/history/coretaming\\_6.html](http://wsyachina.narod.ru/history/coretaming_6.html) (deleted page but it is still available on Internet Archive Wayback Machine here:

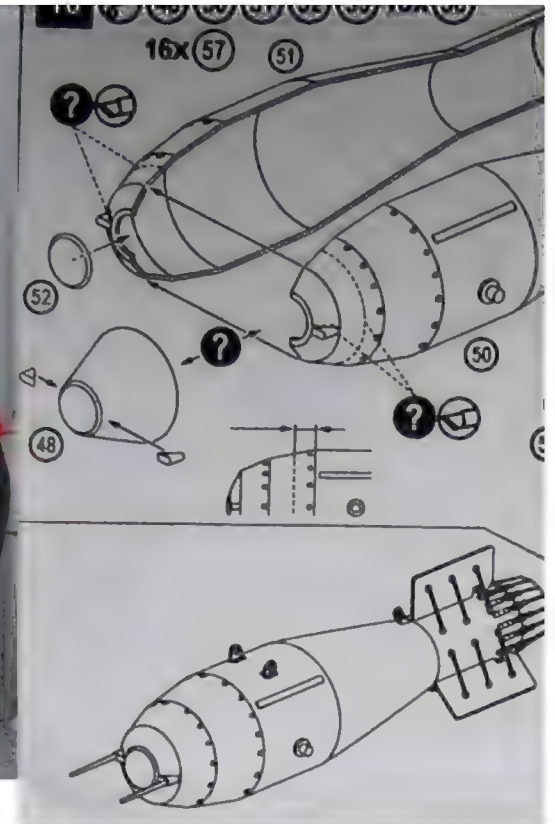
[https://web.archive.org/web/20130921043813/http://wsyachina.narod.ru/history/coretaming\\_6.html](https://web.archive.org/web/20130921043813/http://wsyachina.narod.ru/history/coretaming_6.html)).

"The development of super-powerful thermonuclear charges was considered as an important task for both nuclear institutes of the USSR. The developments of nuclear charges discussed above, tested on October 30, 1961 and September 27, 1962, were carried out at VNIIEF (Arzamas-16 [now called Sarov]). As examples of the development of super-powerful charges carried out by VNIITF (Chelyabinsk-70), one can cite devices tested on September 25 and December 24, 1962. In the first case, a charge was tested that was close in characteristics to the VNIIEF charge tested on September 27, 1962. The comparison shows that they were essentially duplicate designs. In the experiment on December 24, 1962, a super-powerful charge with a nominal energy release of about 50 Mt was tested under conditions of a non-full-scale explosion with a power reduced by about half. The test confirmed the expected characteristics of the charge. Note that in the test version, which is a high purity charge, the actual nuclear [fission and fallout] energy release was small. ... The first test for the same purposes [reduced fission yield proportion, i.e. cleaner] was carried out in the USSR on October 20, 1958 at the test site on Novaya Zemlya in a modification [lead replacing U238] of the previously tested "dirty" two-stage charge. The level of nuclear [fission and fallout] energy release achieved in the development was an insignificant part of the total energy, however, the total [fusion plus fission] energy release was significantly reduced compared to the base [U238 containing] charge. ... Already in 1954, it was realized that a non-nuclear explosion of a nuclear charge is accompanied by the dispersion of plutonium, which is part of it, with its subsequent fallout. The first experiment in which practical results were obtained in this regard took place on October 19, 1954, when an unforeseen failure of a nuclear charge occurred. ... The first experiment to study the "single-point safety" of a nuclear charge was carried out in the USSR on August 26, 1957, and, in essence, the USSR nuclear test program in the interests of security began to be implemented in 1961. A total of 11 experiments of this type were carried out during the period of atmospheric testing in the USSR. After the transition to underground nuclear tests, 14 more special nuclear tests were conducted for these purposes, as well as an additional 17 experiments as part of group nuclear explosions. ... The maximum nuclear energy release in the nuclear safety experiments was realized in the experiment on September 9, 1961. This value is close to the maximum energy release realized in the US nuclear safety tests during the period of atmospheric tests, which is 500 tons of TNT equivalent. [Nice to know Russia is concerned for nuclear safety!]" - *Nuclear testing and the creation of nuclear weapons*, [http://wsyachina.narod.ru/history/nuclear\\_testing\\_1.html](http://wsyachina.narod.ru/history/nuclear_testing_1.html) (deleted but still available on Wayback Machine:

[https://web.archive.org/web/20130515005510/http://wsyachina.narod.ru/history/nuclear\\_testing\\_1.html](https://web.archive.org/web/20130515005510/http://wsyachina.narod.ru/history/nuclear_testing_1.html)



**50 megatons, 2% fission, 27 tons mass**









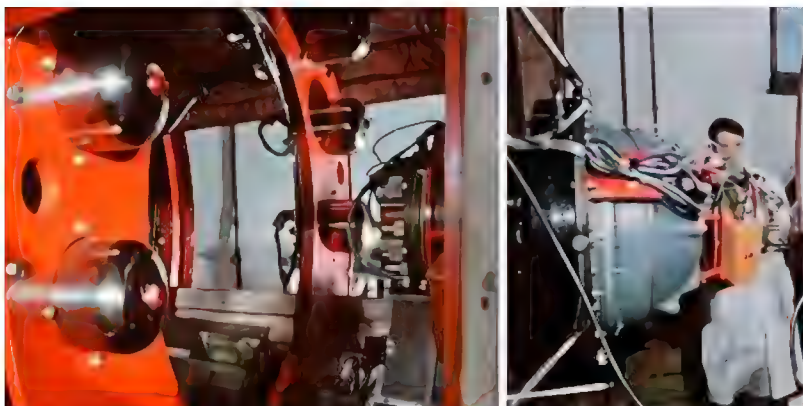
**"[Tsar Bomba designer]**  
**on the fundamental impro**  
**thermonuclear charges, f**  
**developed the theory of '**  
**- <http://www.biblioatom.ru>**  
**iy\_nikolaevich/**

**Hence, the use of two pr**  
**higher yields, the use of**  
**stages, with the higher y**  
**facing towards the tertia**

**Tsar Bomba in Moscow 22 August 2015**

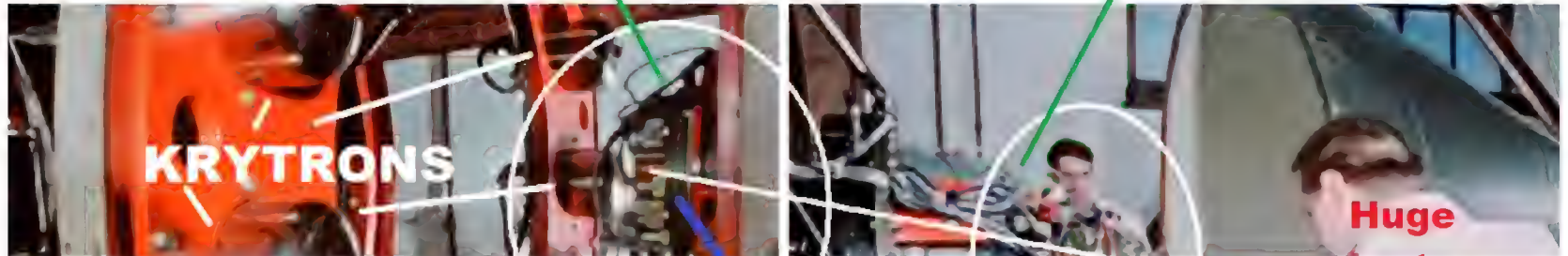
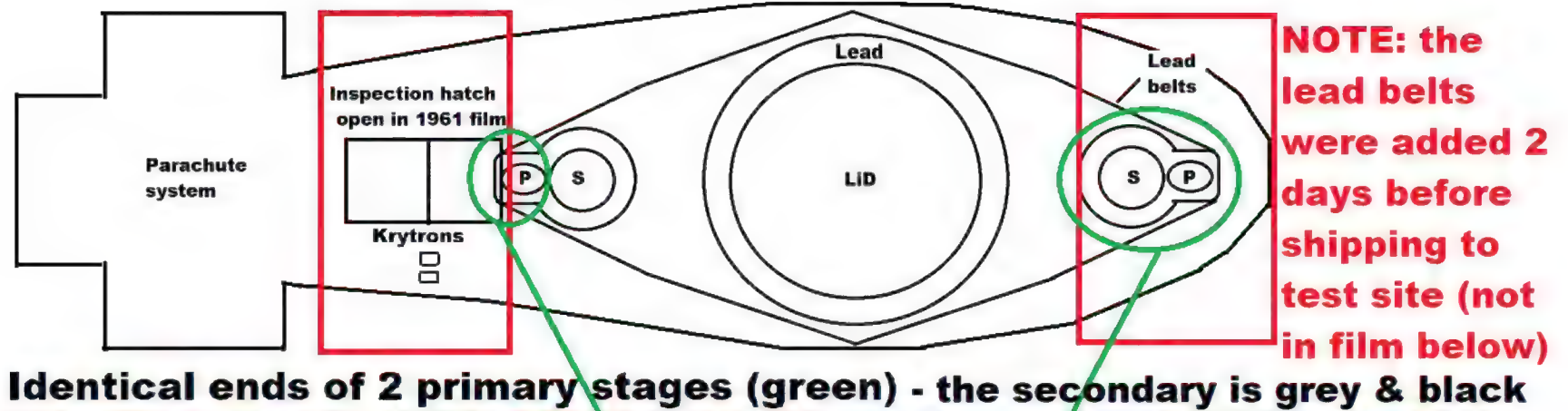






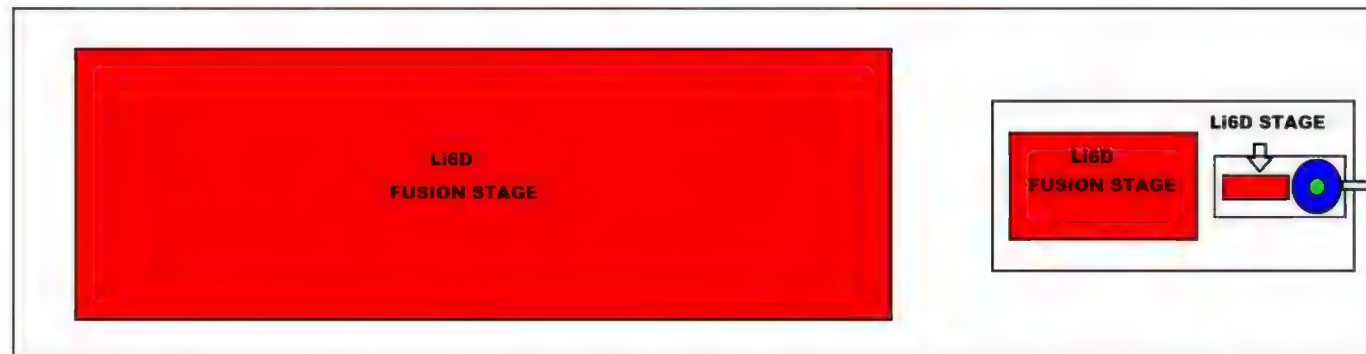
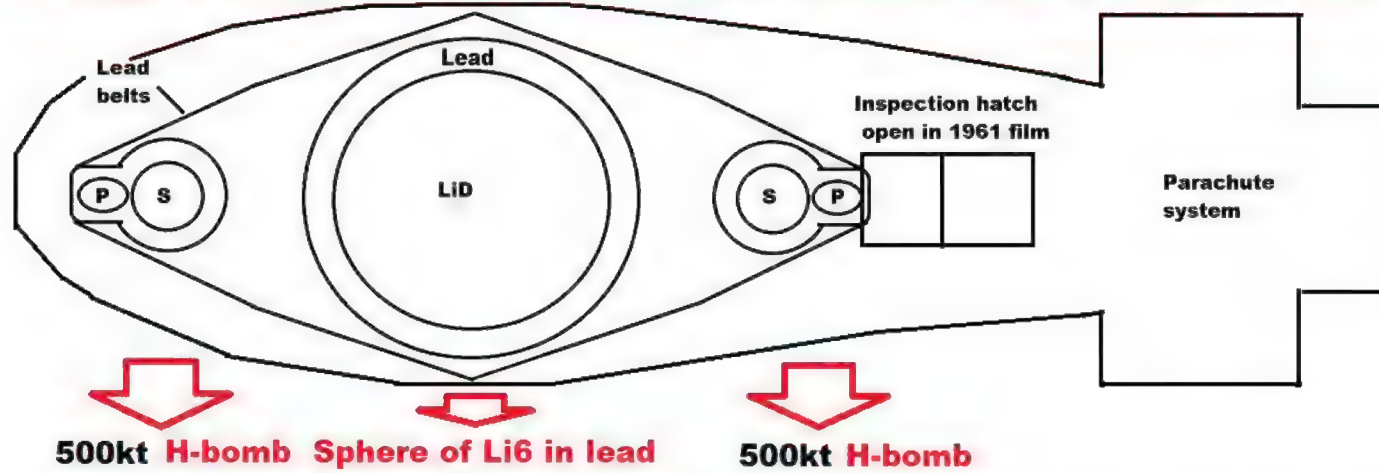






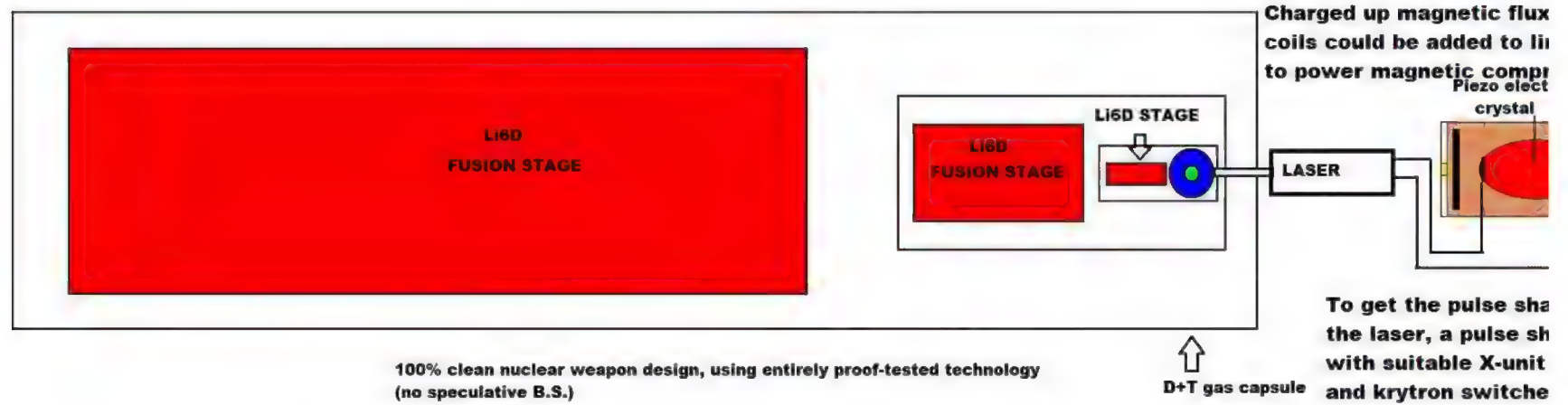


**50 megaton Russian con trick in 1961: two 500kt thermonuclear bombs are used!**



**What would be really impressive: series of bombs within bombs from ONE primary!**







CHANGE 1  
Field Manual No 101-31-1

**NUCLEAR WEAPONS EMPLOYMENT  
DOCTRINE AND PROCEDURES**

**Radius of vulnerability (emergency risk criterion: 5% combat ineffectiveness)**

**Figure 54. Radii of Vulnerability.**

CATEGORY		PERSONNEL (LL) IN— (Based on Governing Effect)			
Radii listed are distances at which a 5 percent incidence of effect occurs. HOB used is 60W <sup>1/3</sup> meters.					
Yield (KT)	Open	Open Foxholes	APCs	Tanks	Earth Shelter
(Distances are in meters)					
0.1	700	600	600	500	300
1	1200	900	900	800	500
10	3200	1300	1300	1250	900
20	4000	1500	1450	1400	1000
100	8000	1900	1800	1800	1400
200	12000	2000	1900	1900	1500
300	14000	2100	1950	1950	1600

**Protective factor = ratio of  
area of effect in the open, to  
area of effect for shelter**

**Example: for 300 kt, the protective  
factor of open foxholes is equal to  
(14,000)<sup>2</sup>/(2,100)<sup>2</sup> = 44.**

Open	Open Foxholes	APCs	Tanks	Earth Shelter	Yield (KT)
1	1.36	1.36	1.96	5.44	0.1
1	1.78	1.78	2.25	5.76	1
1	6.06	6.06	6.55	12.6	10
1	7.11	7.61	8.16	16.0	20
1	17.7	19.8	19.8	32.7	100
1	36.0	39.9	39.9	64.0	200
1	44.4	51.5	51.5	76.6	300

Calculation of the injury-averting protective factors by simple open foxholes and earth shelters, as a function of weapon yield. Most countermeasures are relatively ineffective against tactical nuclear weapons (due to the predominating neutron radiation effect at 0.1 kt yield), but are extremely effective against strategic nuclear weapons with yields of 100, 200 and 300 kt (protective factors of 44 to 77).

The definition of protective factor used here is the factor by which casualties numbers are reduced.





SECRETARY OF DEFENSE  
1000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1000

6/3/2018

The Honorable Mitch McConnell  
Majority Leader  
United States Senate  
Washington, DC 20510

Dear Senator McConnell,

You recently received a letter from several former government officials regarding the

the authors of the letter, "the United States is serious about nuclear deterrent."

Finally, we get to the crux of the authors' argument: feel less restrained about using it in a crisis." Let me be weapons would be the most difficult decision a President the ones before it, has said that nuclear weapons would be circumstances to protect our vital interests and those of our strengthens deterrence by raising the threshold to nuclear

The 2018 NPR has received broad bipartisan support forces was begun by the previous Administration and with The President's request for the W76-2, a supplemental change in Russian nuclear doctrine, exercises, and its new nuclear

LA-12063-MS

This document consists of 74 pages

No. **11** of 90 copies, Series ANuclear Weapon Data  
Sigma 3**SECRET**SAC 200057210000  
DOCUMENT#*The Future of Non-Strategic Nuclear Forces**Are These Capabilities Still Needed? (U)*Joseph S. Howard II  
Edward I. Whitted

April 30, 1991

Therefore, we are incredulous of US forces without NSNF to prevent war or to terminate war against hostile nuclear-armed states. The rationale for NSNF must rest upon its capabilities to deter a plausible resurgent Soviet Union, or any of several regional powers with potential nuclear capabilities. As NSNF kept the long peace in Europe because it engendered cautious behavior, so should NSNF be kept as an incalculable risk towards any nuclear state contemplating aggression.

The rationale for NSNF also involves the element of credibility: the NCA should have options other than central strategic forces for an appropriate response.

21

Under the three categories of options we deter aggression or respond to threat : rationale of deterrence or restoration o prevention and if need be, war termination

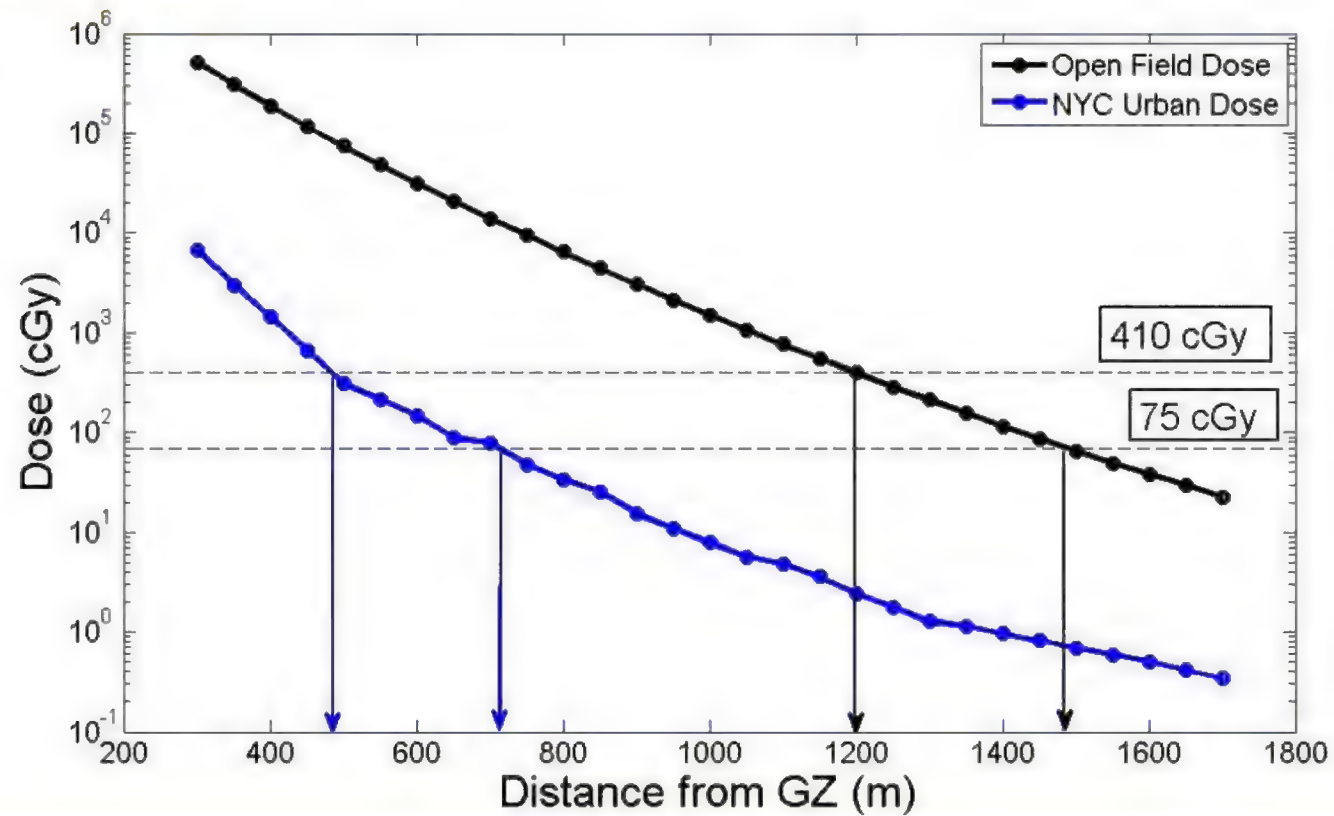
**Recommendations****1. Army should keep an organ**

- Maintain the W79 and 8-In
- At the appropriate time (a

UNCLASSIFIED

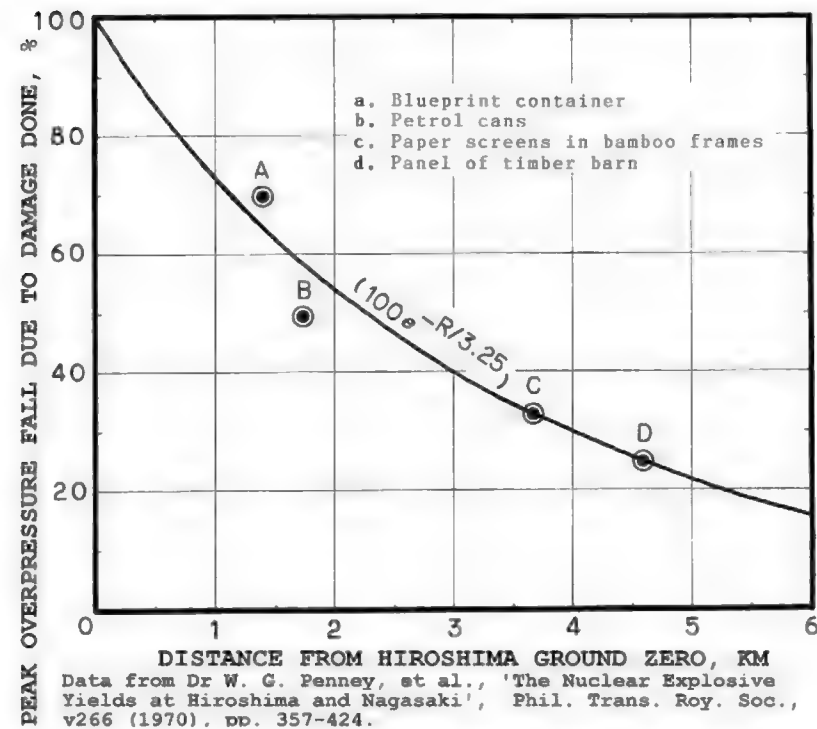


# Significant Reduction in Total Dose



UNCLASSIFIED

12





**Basis for the 99.9% clean  
Ripple II 10 megaton  
Houstonic deterrent,  
tested by Nuckolls in 1962**

*Inertial Confinement Nuclear Fusion:  
A historical Approach by its Pioneers.*  
Edited by Guillermo Velarde and  
Natividad Santamaría  
Roxwell & Davies (UK) Ltd © 2007

## Contributions to the Genesis and Progress of ICF

John H. Nuckolls

*Lawrence Livermore National Laboratory, LLNL*



**"The implosion enables  
efficient TN burn by  
reducing the fusion burn  
time relative to the  
inertial confinement time  
and the radiative cooling  
time.(1)"**

**(1): For example, a  
spherical implosion  
increases the specific  
burn rate faster than the  
inertial confinement time  
decreases. Specific burn  
rate is proportional to**

In 1957, Brown asked me to help evaluate the feasibility of  
by periodically exploding half-megaton yield H-bombs in a  
cavity excavated in a mountain. This large-scale ICF scheme  
to develop peaceful uses of nuclear explosives.<sup>1</sup> The commerc

I realized that a few hundred electron volt radiation tempe  
ate a very small-scale fusion secondary. Radiation losses into  
the fourth power of the radiation temperature. With low radi  
can be avoided even though the surface-to-volume ratio incre

Implosion symmetry is enhanced because the radiant ener  
walls of the hohlraum is efficiently re-radiated multiple times  
er than the implosion velocity of a fusion capsule. Energy rad  
idly equalizing temperatures.

Growth rates of fluid instabilities are reduced because kil  
hundred eV temperature black body rapidly ablates the unsta

Driving pressures of several hundred megabars and inn





ABOVE: physicist and author Colin Bruce Sibley's 1977 book *Surviving Doomsday*, which was [reviewed by Peter Laurie in \*New Scientist\*, 13 April 1978, p97](#), where Laurie points out: "I'm afraid that Mr Sibley has fallen into the popular error of confusing what modern weapons can do, with what they will do." This followed his [1976 Foreign Affairs Research Institute paper, "The strategic significance of Soviet civil defence preparedness"](#). Unfortunately, Sibley had been producing children's educational stuff, for example producing a [vinyl record of the 1969 Moon Landings, \*Journey to the Moon\* \(Pickwick International Ltd.\)](#), and in 1976 he



## QUESTIONS

authored *The How and Why Wonder Book of Energy and Power Sources* and *The How and Why Wonder Book of Oil* (Transworld Publishers Ltd., 1976 and 1979), see illustration below. He used this same children's book style to write *Surviving Doomsday!* Sibley (1935-2008) later edited *Protect and Survive Monthly*. The reason for this was the attitude of publishers: they knew that hard facts on nuclear weapons didn't sell easily and needed a lot of "gloss" to be economically viable for printing. This same farce occurred with a UK Government booklet, *Protect and Survive*.

## Target Cities...

can  
they be  
evacuated?

Graham M.  
Stathers



During a nuclear attack (or indeed conventional/gas attack), British citizens will be instructed to remain indoors, to 'stay-put' inside crude refuges made of wood, plastic bags filled with soil and slanted doors, or back garden trenches. This extraordinary dictum has led to heated debate; in parliament, in local authority council chambers, at home and in the factories and offices. Most of this argument and counter-argument is reflected in the news-casts and special features of the press and broadcasting media. Undoubtedly, without 'proper shelters' millions may die or be seriously injured if our cities, towns, ports, and airfields fall victim to a massive air attack.

Graham Stathers — cartographer and member of the Royal United Services Institute for Defence Studies and the National Council for Civil Defence, has made a special study of city evacuation logistics (or Crisis Relocation in the US.). His knowledge of maps and population statistics provides us with some new insights into the practicalities of relocating large numbers of citizens away from potential targets. This article is based on a Monograph Study prepared by the author after several years of research. It is possibly the 'first' unofficial report of its kind in the United Kingdom. And it is obvious that its findings underline the value of city-evacuation in time of international crisis — both from a humane and defensive morale standpoint. Without a national shelter policy, 'stay-putters' would undoubtedly 'vote' for evacuation — regardless of the official attitude. Unsupervised 'panic' evacuation can only lead to the widespread breakdown in public order and the disinheritance of government directives. We could lose the fight for freedom by turning in upon ourselves — victory would go to the attacker...

IN ORDER TO CREDIBLY DECLARE WWII AGAINST GERMANY ON SUNDAY 3 SEPTEMBER 1939 DUE TO THE  
INVASION OF POLAND, BRITAIN EVACUATED KIDS FROM LONDON IN OPERATION PIED PIPER 48 HOURS EARLIER

Information which has reached His Majesty's Government in the United Kingdom and the French Government indicates that German troops have crossed the Polish frontier and that attacks upon Polish towns are proceeding. <sup>It is the Government's belief that this information is correct.</sup> It appears to the Government of the United Kingdom and France that by their action the German Government have created conditions (viz, an aggressive act of force against Poland threatening the independence of Poland) which call for the implementation by the Governments of the United Kingdom and France of the undertaking to Poland to come to her assistance.

I am accordingly to inform Your Excellency that unless the German Government <sup>can immediately satisfy His Majesty's Government that these rumours are unfounded, or in the alternative are prepared to give His Majesty's Government satisfactory assurances that the German Government has suspended all aggressive action against Poland and are prepared promptly to withdraw their forces from Polish territory, His Majesty's Government in the United Kingdom will without hesitation fulfil their obligations to Poland.</sup>

This is Britain's final ultimatum letter to Germany, written by the fascism appeaser and Jew hater Lord Halifax, delivered at 9 am on 3 September 1939.

Britain's "free press" criticisms after appeasement of

W  
FOR MURDER  
FOR



FOR MURDER  
FOR KIDNAPPING  
THIS RECKLE



















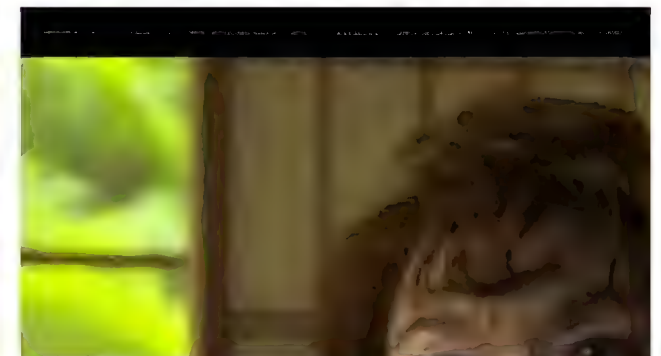


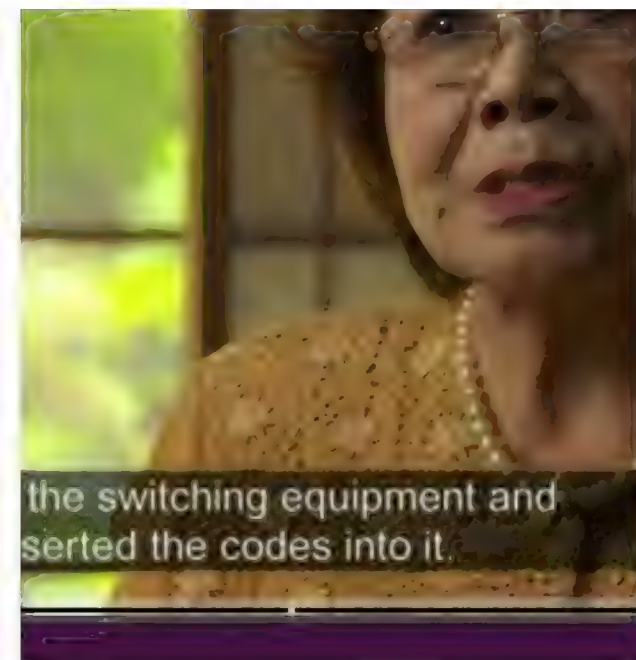
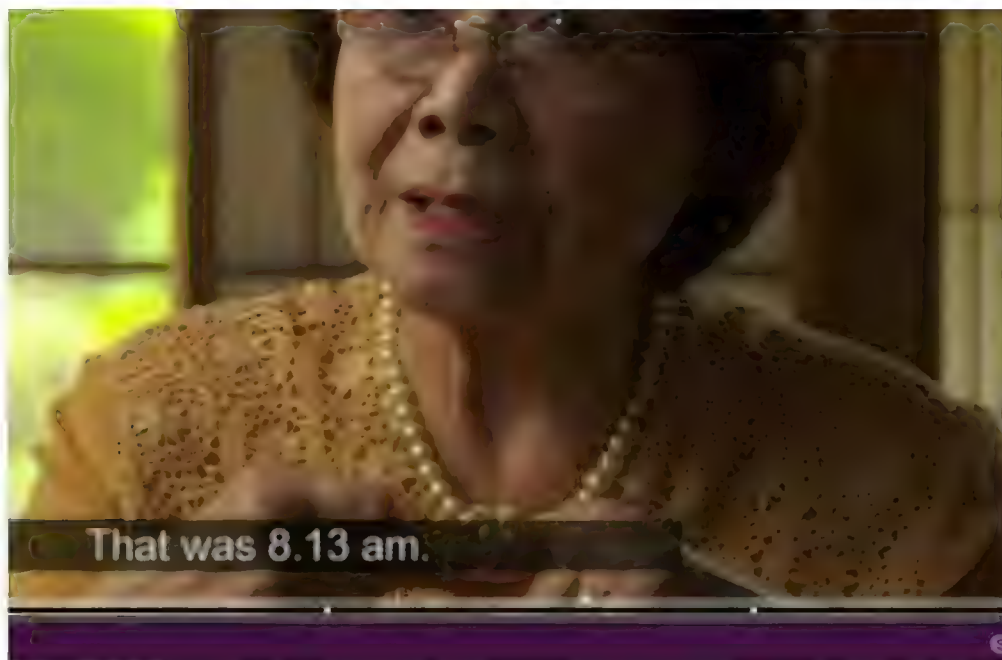












ABOVE: Air raid sirens operator Yoshie Oka who survived the nuclear explosion near ground zero in the military bunker just north of Hiroshima Castle on 6 August 1945, identified the B29 bombers (which Tokyo had tracked by the Enola Gay B29 bomber radio call sign), and passed on a report to her seniors in time to get the people of Hiroshima into their air raid shelters, most of which survived intact against a 16 kt nuclear air burst at 600 metres altitude (*by cube-root scaling, similar peak pressures would occur at ground zero for a 16 megaton burst at 6000 metres altitude, since the cube-root of a 1000 fold increase is 10, i.e.  $10^3 = 1000$ , and although the blast duration is also 10 times longer, the blast arrival time also scales up similarly, so it also takes 10 times longer for the blast wave to arrive at ground zero, giving people a far better chance to "duck and cover", and of course in the higher yield burst the scaling of the bomb case thickness and burst altitude will allow far more mean free paths of radiation shielding metal and air which make the initial radiation a minor threat like the thermal flash inside concrete buildings*). But the army officers in Hiroshima were taking breakfast so there was a long delay, and eventually at 8:13, just two minutes before detonation, she finally received the order to start the complex sequence needed to sound the public air raid sirens, putting codes into the air raid sirens to permit operation! She was still trying to get the air raid alarm out when the bomb went off. This is why there was no warning in Hiroshima and most people were not in the plentiful public shelters or concrete buildings. Shamefully this vital evidence for the failure of civil defense in Hiroshima is completely edited out of the fake news which passes for nuclear weapons information in so-called free democracies.



# КОЛЛЕКТИВНЫЕ СРЕДСТВА ЗАЩИТЫ ОТ АТОМНОГО О

















ABOVE: Peter Laurie's article on civil defence in the *Sunday Times Magazine*, 10 December 1967, pages 39 et seq., formed the basis of his later book *Beneath the City Streets*. The article states (on page 50) that the popularist (faked) megadeath nuclear war casualty figures were even in 1967 not without precedent since exactly the same media trash exaggerations on casualties and knock-out blow strategy also existed before WWII (contributing to the appeasement that encouraged Hitler): **"a very similar situation existed in 1938. Everyone believed - and these were official estimates - that the Luftwaffe could flatten half London in 3 weeks and kill 3,000,000 people. Few Londoners ran away, and few got bloodthirsty. More to the point, a booklet was issued to every household that winter: *The protection of your home against air raids*. In August 1939 Mass Observation did a survey on what people knew of something simple: the two air raid sirens. Five out of six got them wrong ..."** Laurie's article was, of course, published just 4 months before the British civil defence corps was abolished by hard left wing Prime Minister Harold Wilson in March 1968. But Laurie points out on page 40 of his article that the London underground (ordinary tube trains, not just the specially hardened shelters at 8 stations) will survive directly below a 5 megaton burst at 8,000 feet altitude, which optimises blast effects on buildings, and he points out that the "fireball does not touch the ground: there is no significant fallout." Sure, you can reduce the height of burst to try to damage underground facilities and to cause fallout, but then you no longer optimise the effects on ordinary houses. Laurie in his massive nuclear weapons effects diagram on the same page points out that 75% of British houses are demolished at 5.25 miles from the 5 megaton air burst at 8,000 ft altitude: "but 90% of people under stairs will live" (the WWII Morrison table shelter principle, which is independent of bomb yield because the weight of a collapsing house is independent of bomb yield). His article states that the 1967 British civil defence budget was 10s per person, compared to 17s 6d in West Germany, but adds that "Since 1948, when [nuclear war] civil defence began, we have spent over £1000 million; roughly the capital cost of the deterrent and delivery systems." Laurie also points out in his 1967 article that the very high protection factors of deep shelters make them unfeasible because Russia can produce rockets to negate them for 33% of the cost of the shelters. In order to win an arms race by economic attrition through civil defence, therefore, you need cheaper shelters that cost less than the weapons the enemy is making to try to break through your defences (the same point occurred in WWII, when cheap indoor Morrison table shelters were deployed instead of the economically-crippling gold-plated variety, having been invented and tested by Lord Baker and his assistant Edward Leader-Williams, who - with Frank H. Pavry and George R. Stanbury - in the 1950s tested key British WWII shelters against nuclear weapons at Monte Bello and Maralinga and used the results to develop them into effective but cheap nuclear shelters, published finally in the 1982 UK Government book *Domestic Nuclear Shelters - Technical Guidance*). Finally, Laurie makes the point that devastation in war can transform politics into dictatorial communism: "Russia, for example, by the end of the first world war [the Red revolution was in October 1917 in Russia] had lost, in comparison to 1913: one half to two thirds livestock, one half grain production, 90% of coal, steel, textiles, and transport, 28 million people." The lesson is that if your country is devastated by the effects of war like Russia or Germany in 1918 or Vietnam in 1975, the survivors are likely to have to live in a politically extreme dictatorship, justified by the sheer destruction and the populist need for revenge at any cost.

*Peter Laurie, Sunday Times Magazine 10/12/67*

ABOVE: photos of paranoid dictatorial Russia from the 25 March 1933 *Illustrated London News* article, when British citizens in Moscow (Allan Monkhouse, John Cushny, W. H. Thornton, W. H. McDonald, Charles Nordwall et al.) were arrested by the OGPU of Stalin's regime on trumped up charges of sabotage (they all worked for the British Metropolitan-Vickers electrical engineering company, and the Russians claimed falsely the company was planning to blow up the Dnieprostroy Dam by pouring sand or acid into the turbines, when in fact the blades were 5 tons and were washed clean by millions of gallons of water daily!), and when ordinary Russians had to endure food rationing in peacetime.



MOSCOW—WHERE BRITISH SUBJECTS WERE ARRESTED AND MAY BE TRIED: WORK AND WAITING



FROM A LETTER IN NEWSPAPER WROTE THE SUBJECT  
OF INTERESTING CONTENTS AND PLEASED BY  
FROM AND COLLECTED MATERIALS AND  
ON WHICH THE CHARACTERISTICS OF VARIOUS  
FACTORS AND FACTORS IN THE  
SYSTEMS - ALL THE FACTORS AND

[illegible]

Maxima after an uncomfortable journey from Zhukovskaya where the service was smoothly passed by water. In 1911, they were content with horse-drawn private automobiles were few but there were many and the farms were frequent and full. She saw a pair of pikes passed by in a chaotic streamer, the bizarre grandeur of old Russia mingled with the crude Texas and paralytic lines of modernistic manifestations, the great stars that had given glory to this thronging twenty years before were closed and white stars draped their vast windows dimly. Dingy tenements opened their sleepy portals and sent forth streams of workers to shops and factories. These people seemed better dressed than those in Zhukov though they had caps for hats and sneakers for shoes and their blouses though unwashed, were a picturesque and sensible costume. The manners seemed rough but not unkind.

We passed the Red Square. It seemed a right







ABOVE: the relationship of civil defence by a dictatorship to its aggressive policy (such as Germany's compulsory cellar bunker shelters in the 30s and Russia's in the cold war) was documented in the 14 October 1933 *Illustrated London News* showing civil defence anti-disarmament propaganda in Hitler's Nazi Germany, stating: "In view of the world-wide interest in the question of disarmament, with which is involved that of the re-armament claimed by Germany, it is significant that the Nazi regime appears to be conducting all its activities, and training of the youth of the nation, on more or less military lines ... We illustrate in the photographs on these pages one phase of the all-pervading propaganda calculated to create in the German people the fear that one day or another they may be attacked ... children are taught to take refuge promptly in special underground shelters and to extinguish, by sand, fires of the kind that might be caused by bombs. The spirit in which these lectures are given may be gathered from the following extract ... : " 'Germany is not allowed to have fighting aeroplanes on land or sea.' Thus runs Clause 198 of the shameful Treaty of Versailles ... Germany has been completely disarmed and has no defence against an enemy air attack." Having first set up effective German civil defence in 1933, the next step of the Nazis was to re-arm in preparation to setting the clock back to 1914. Stalin did the same in Russia. Putin follows suite. As Herman Kahn forecast over 60 years ago, we are now paying the price for neglecting civil defence and also for refusing to put freedom loving states ahead in the arms race. The options available to such weak loons are disastrous.



OF THE ILLUSTRATED LONDON NEWS OCT. 14, 1941

**GERMANY PRACTISING "PASSIVE AIR DEFENCE":**  
TEACHING CIVILIANS HOW TO ACT UNDER AERIAL ATTACK.



**PROPAGANDA**  
INSTRUCTION IN







THE DAILY MIRROR, Saturday, February 20, 1936.

Broadcasting - Page 20

# Daily Mirror

THE DAILY PICTURE NEWSPAPER WITH THE LARGEST NET SALE

EUSTACE . . . . Page 8  
QUIET CORNER . . . 15  
DOCTOR'S DIARY . . 17  
SHORT STORY . . . . 19  
DOROTHY DIX . . . . 21  
BELINDA . . . . . 22

No. 10,002 Registered at the G.P.O. as a Newspaper. SATURDAY, FEBRUARY 20, 1936 One Penny

Amusements: Page 32

## HITLER'S "LET'S BE FRIENDS" PLEA TO WORLD

An Exclusive Interview with "Daily Mirror"

### "I APPEAL TO REASON"

Passionately... fervently... in the plain words of a Man of the People, Adolf Hitler, Leader and Master of Germany, in an exclusive interview with the "Daily Mirror" yesterday, pleaded with the world:-

**"LET'S BE FRIENDS"**

"I appeal to reason in international affairs," he said. "I want to show that the idea of eternal enmity is wrong. We are not hereditary enemies."

The "Daily Mirror" challenged his views with those in his book, "My Struggle." "My justification," said the Leader, "I shall write in the great book of history."

### Man of Destiny Speaks

By BERTRAND DE JOUVENEL

IN the room where the destiny of Germany is planned her Man of Destiny sat to receive me. Simply dressed, sitting at his desk, he unburdened to me his heart... his hopes... his fears. He eyed me keenly for a moment. Then... slowly, this man who axes into the mind, said:

what is the most advantageous for my country? **"AND THE BEST THING FOR MY COUNTRY IS PEACE."** "Please imagine me as someone quite different from what I am. They know quite well that I started at the bottom, and have become the master of Germany, which is rather an astonishing achievement, and there must be some extraordinary... **"Mysticisms,"**



look on their fighting light: his fists clenched. "Political problems appeared complicated. The German people did not understand them. They preferred, in such conditions, to leave to professional politicians the task of freeing them from these complications. "I simplified these problems. I reduced them to simple terms. "The Germans understood—and they followed me! "And so the class-war—that notorious war of the classes—is shown to be an absurdity. "I demonstrated the absurdity and the

### Rest of the News

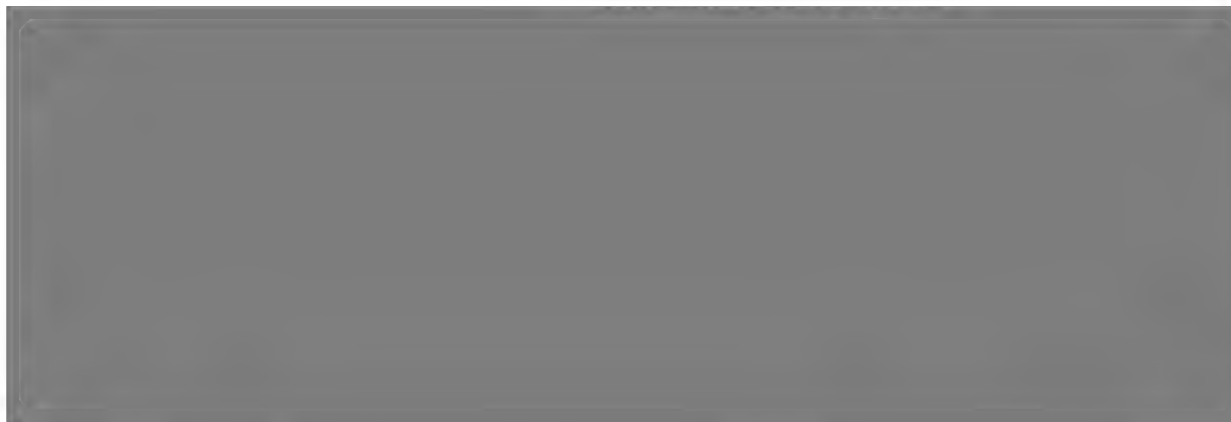
Countess Haugwitz-Reventlow, formerly Miss Barbara Hutton, the Woolworth heiress, who gave birth to a son on Monday, was last night stated to be gravely ill after an operation. Her back on...

<p>"You I know want you to discuss "You say to yourself, 'Hitler makes peace, destinations to us, but is it in good faith? Is he sincere?" "Instead of giving yourselves up to psycho- logical guesses, would you not do better to attempt to make use of logic?" "This logic, to which the French profess implicit belief—does it not lead you to think that it would be obviously to the advantage of France and Germany to maintain friendly relations?" "Would it not be ridiculous for them to meet in conflict on new fields of battle?" "Is it not logical that I should wish for</p>	<p><b>Chance, or—?"</b> "Some say that it is due to violence that I have been elected of the German nation. As a matter of fact, there was only a handful of us to begin with. We would have had our work cut out for us if I had captured by violence a nation of millions. "Others say that my success is due to the mythicalism that I have created. Still others declare that it is due to chance. "I must tell you what has brought me to where I am—" Hitler's face took on a change. His eyes</p>	<p>people understood me! "I make an appeal to their reason. "NOW I AM MAKING AN APPEAL TO REASON IN INTERNATIONAL AFFAIRS. "I WANT TO SHOW MY PEOPLE THAT THE IDEA OF EVERLASTING ENMITY IS ABSURD; AND THAT WE ARE IN NO WAY HEREDITARY ENEMIES. THE GER- MAN PEOPLE UNDERSTAND THAT. TWO "The German people have followed me in a reconciliation that has been infinitely more difficult—the reconciliation of Germany and Poland. "By signing this agreement between Germany (Continued on back page)</p>	<p>Poor Family's Mission Home .... Page 1 Memorial to King George ..... 2 Good News ..... 2 Czechs: An End to It ..... 2 Football Clubs Do It "Hush Hush" ..... 3 Things to Come ..... 4 Painted King George Living in State ..... 5 Polishmen Leave Russia ..... 5 Buckling New Face on a Man ..... 6 Life or Death in a "Trench" ..... 13 Four Heroes of a common ..... 21 Sir Austen and Remembrance ..... 21</p>
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ABOVE: Western nuclear disarmament from 31,255 US warheads in 1966 to 3,750 in 2020, is a repeat of the weapons effects exaggerations for disarmament propaganda, a lying disaster which allowed a defeated Germany in 1918 to rearm and start WWII, as these quotations from an earlier blog post here prove, which also quotes Kissinger (before he was corrupted by political expediency) explaining how tactical nuclear weapons can safely be used to deter invasions: **'The Hungarian revolution of October and November 1956 demonstrated the difficulty faced even by a vastly superior army in attempting to dominate hostile territory. The [Soviet Union] Red Army finally had to concentrate twenty-two divisions in order to crush a practically unarmed population. ... The high casualty estimates for nuclear war are based on the assumption that the most suitable targets are ... cities ... The elimination of area targets will place an upper limit on the size of weapons it will be profitable to use. Since fall-out becomes a serious problem [i.e. fallout contaminated areas which are so large that thousands of people would need to evacuate or shelter indoors for up to two weeks] only in the range of explosive power of 500 kilotons and above, it could be proposed that no weapon larger than 500 kilotons will be employed unless the enemy uses it first. Concurrently, the United States could take advantage of a new development which significantly reduces fall-out by eliminating the last stage of the fission-fusion-fission process.'** - Dr Henry Kissinger, *Nuclear Weapons and Foreign Policy*, Harper, New York, 1957, pp. 180-3, 228-9.

ACKNOWLEDGEMENTS: (1). Thank you to <http://www.militarystory.org/nuclear-detonations-in-urban-and-suburban-areas/> for re-blogging a typical post from this [glasstone.blogspot.com](http://glasstone.blogspot.com) blog, kicking out the lies from under secrecy obsessed loons who want disarmament to start WWII.

(2). Thank you to <https://www.nextbigfuture.com/2016/02/are-nuclear-weapons-100-times-less.html> for reblogging: "Are [strategic, not tactical] Nuclear Weapons 100 times Less Effective Than Supposed? Nigel B. Cook's Glasstone.Blogspot Blog has beautiful coverage of many nuclear topics here. <http://glasstone.blogspot.co.uk/> Cook is a master researcher who digs up incredible piles of research on all topics nuclear and the following is digest of various writings of his gathered for easy access centered on the remarkable thesis that the effects of nuclear weapons, while literally awesome, have been exaggerated or misunderstood to an even greater extent, with perhaps very considerable military consequences."



FIGURE 2

**Size of the U.S. Nuclear Weapons Stockpile, 1945–2020**

**(OR, WHY PUTIN FEELS CONFIDENT INVADING UKRAINE JUST AS HITLER INVADED HIS NEIGHBOURS WHILE PACIFISTS DISARMED THE UK UNTIL 1935 THEN REARMED SLOWER THAN THE NAZIS, TO AVOID PROVOKING A SECOND WORLD WAR BY WINNING AN ARMS RACE.)**



**“There is no security in arman  
we shall be no party to piling 1**

**– Labour Party Leader of the B  
House of Commons Opposition  
Clement Attlee, 1935 (two yea  
Hitler took power and began r  
Germany; quotation from Gilbe  
Gott, The Appeasers, 1967).**

TIPS: There is compendium debunking commonplace anti-nuclear CND disarmament propaganda, exaggerations and fake news on nuclear weapons effects and deterrent capabilities [linked here](#). Also, each post on this blog can be viewed in either a simple format, e.g. for this current post, <https://glasstone.blogspot.com/2022/02/analogy-of-1938-munich-crisis-and.html> is the simple (faster loading) format, or you can view it (slower loading) in a fancy format by adding: ?m=1 to the end of the URL, e.g. <https://glasstone.blogspot.com/2022/02/analogy-of-1938-munich-crisis-and.html?m=1>

**"The Budapest Memorandum on Security Assurances ... at the OSCE conference in Budapest, Hungary on 5 December 1994 ... signed by three nuclear powers: the Russian Federation, the United Kingdom and the United States ... prohibited the Russian Federation, the United Kingdom and the United States from threatening or using military force or economic coercion against Ukraine, Belarus, and Kazakhstan. As a result of other agreements and the memorandum, between 1993 and 1996, Belarus, Kazakhstan and Ukraine gave up their nuclear weapons." - Wiki.**

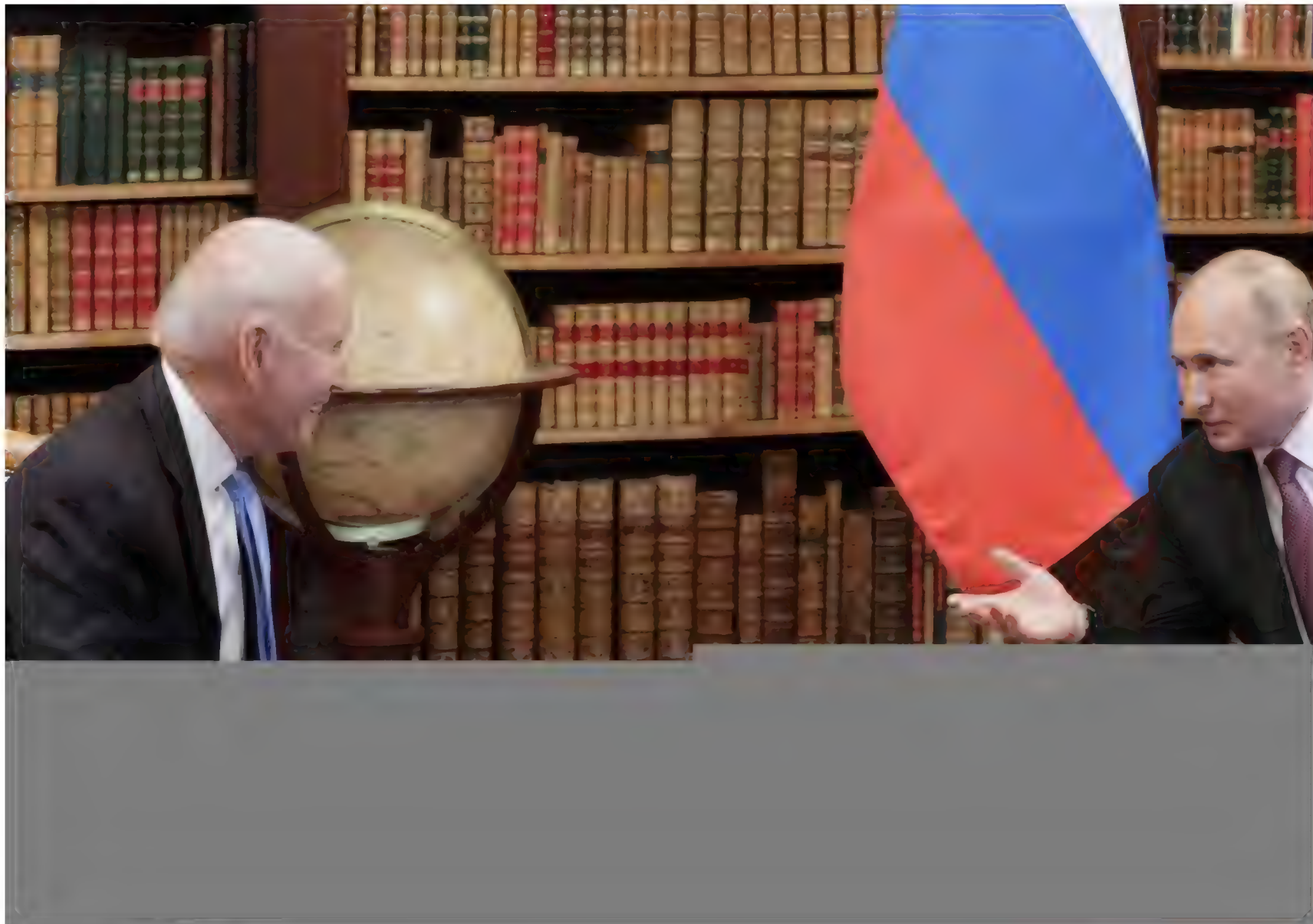
**NATO needs to come to its senses and rearm to deter WWII instead of stupidly leaving Putin with more nuclear weapons than anyone else, to intimidate like Hitler (see 1930s newspapers below, which spell out the problem plainly). The problem is, the media is dominated by nuclear liars just as it was dominated by gas war liars in the 1930s, who encouraged war while pretending to be doing the opposite. Fighting a conventional war using Ukraine as proxy, while having an inferior nuclear stockpile, is hardly credible nuclear deterrence (please click here for our brief declassified data debunking Glasstone's lying data on nuclear weapons effects) . Also see the compendium [linked here](#) for more detail on the actual declassified effects found in Hiroshima, contrary to Glasstone's very deceptive treatment. Please also [click here](#) for our declassified 4069-pages compendium of nuclear weapons deterrence data, debunking the Ukraine's "security through nuclear disarmament" myth YEARS AGO!**

Biden confuses Iran and Ukraine in State of the Union gaffe



'Sharp as a tack': Joe Biden confuses Ukraine and Afghanis...









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CHARLES BALL

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Derivative Classifier: V. W. Slivinsky, Group Leader

LLNL/CG-SS-2/OADR



## States Assessments Intelligence Brief

# Denuclearizing Ukraine: Potential Bumps in the Trilateral Road (U)

Charles I. Ball

17998

**Ukraine's  
1990s nuclear  
disarmament  
risks exposed  
only in  
SECRET  
reports kept  
locked away  
from the  
Western**



DEPARTMENT	1 <sup>st</sup> REVIEW DATE	1
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NAME	3 <sup>rd</sup> REVIEW DATE	4
NAME	4 <sup>th</sup> REVIEW DATE	4

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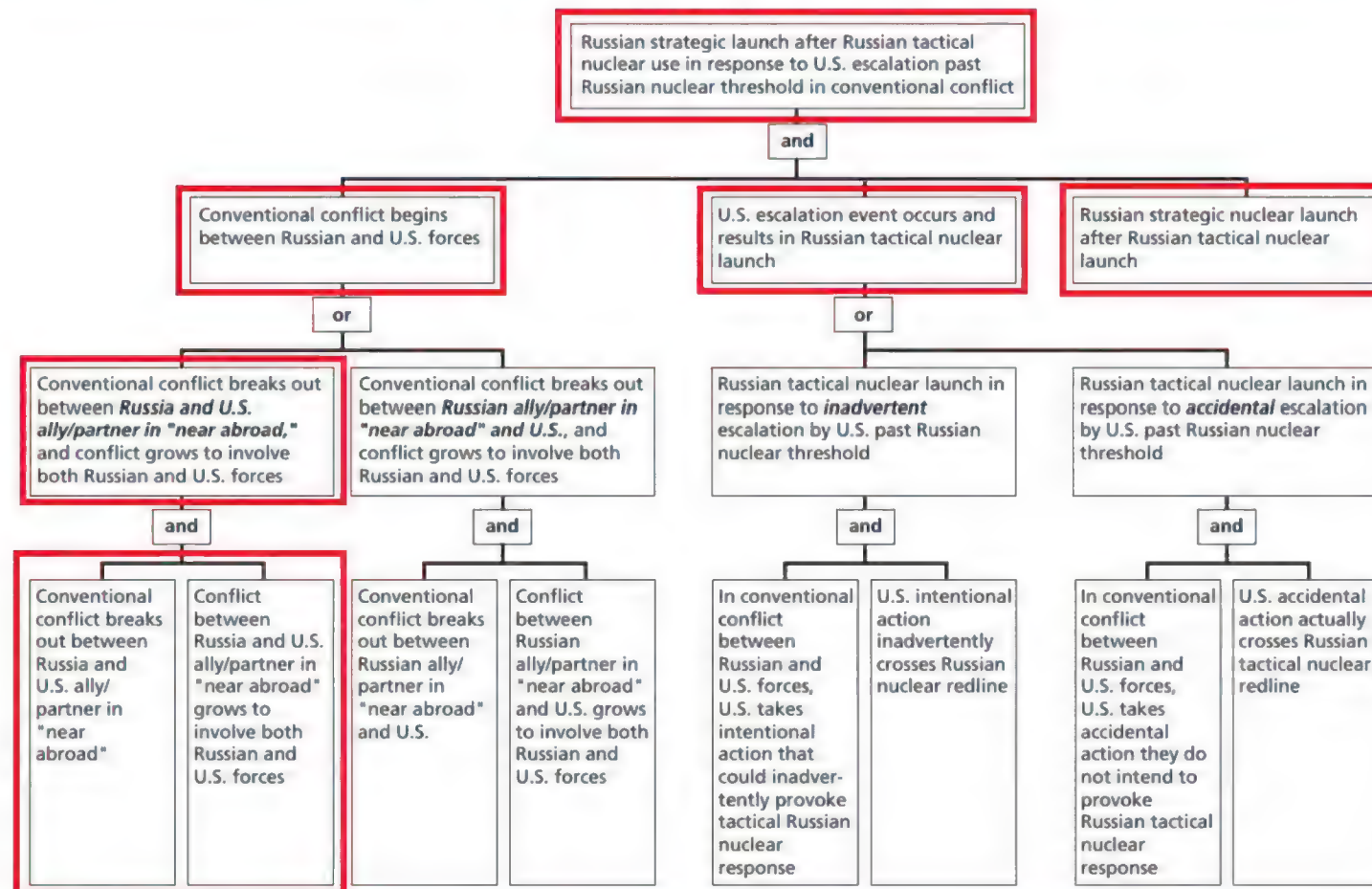
UNCLASSIFIED

A-591-79(S) (SECRET)  
December 16, 1991

NSNF = tactical nuclear weapons

UNCLASSIFIED



**Figure 2. Fault Tree for Russian Strategic Launch After U.S. Escalation Past Russian Nuclear Threshold**

RAND PE191-2

"During the Cold War, it was often assumed that the use of nonstrategic nuclear weapons would eventually escalate to East-West strategic nuclear exchanges (Quinlivan and Olicker, 2011, p. 72). ... there seems to be a

ABOVE: "During the Cold War, it was often assumed that the use of nonstrategic nuclear weapons would eventually escalate to East-West strategic nuclear exchanges (Quinlivan and Olicker, 2011, p. 72). ... there seems to be a recognition within Russia of brinkmanship hazards—namely, that Russian nuclear use could get out of hand and result in further escalation (Quinlivan and Olicker, 2011, p. 72)." - Anthony Barrett, 2016 RAND Corp report RAND-PE-191-TSF, *False Alarms, True Dangers? - Current and Future Risks of Inadvertent U.S.-Russian Nuclear War*, page 7.











ABOVE: W54 Davy Crockett tactical nuclear deterrent of approximately 0.02kt yield and 20ft burst altitude, tested in front of Robert Kennedy, Attorney General, in the final Nevada atmospheric nuclear weapon trials to deter invasions: 2,100 were deployed in the 1960s, successfully deterring a Russian invasion. But ALL tactical nuclear weapons were removed in the 90s after false propaganda from appeasers, leaving a dangerous gap in the spectrum of deterrence. (Photo credits: US National Archives photos above taken on 14 July 1962 show tactical 0.02kt+/-10% yield W54 Davy Cockett nuclear weapon projective M388 on M29 launcher at Nevada Test Range, with two soldiers from the Heavy Weapons Platoon, 1st Battalion, 12th Infantry, 4th Infantry Division, US Army.) The Ukraine invasion is an invasion deliberately caused by the Budapest Memorandum on Security Assurances signed on 5 Dec 1994 to remove the nuclear deterrent from Ukraine to prevent war. Like the disarmament of the UK up to 1935 to guarantee "peace in our time", loads of excuses are used to try to justify weakness and enemy aggression, by left wing warmongers who profit by causing war with its refugee crises with financial and humanitarian disasters. Until the so-called peacemakers disarmed Ukraine of its 176 intercontinental ballistic missile (ICBM) launchers with some 1,240 warheads, leaving Ukraine to make improvised Molotov cocktail petrol bombs (polystyrene dissolved in petrol in a bottle) to try to protect its kids from Russia, Russia was deterred from invading Ukraine by reliable nuclear deterrence. **Ukraine had experts and still does have expertise on servicing and using those nuclear weapons - in evidence, before they were invaded, we bought the confidential Russian nuclear weapons employment manuals (LINKED HERE) from the Ukrainian military on ebay. In fact, Russian nuclear weapons are more straightforward and easier to service and employ than American nuclear weapons, so the lie that the Ukrainian nuclear weapons in 1994 couldn't be serviced by Ukraine - which has Europe's largest nuclear reactor and all the nuclear expertise that goes with it - is just that, a lie by anti-nuclear folk.**

**"In the event that deterrence fails, this Perspective also finds a number of factors that could undermine NATO's ability to respond to a crisis. As repeated RAND wargames have shown, Russia could quickly overwhelm any or all of its Baltic neighbors (Estonia, Latvia, and Lithuania), which are not sufficiently supported by NATO allies to stop a concerted thrust into their territory ... In dozens of RAND-run wargames involving a variety of players, strategies, and variations in initial starting conditions, the longest it took Russian forces to reach the outskirts of the capitals of Estonia and Latvia in a short-notice invasion was 60 hours (Ref. 19)." - Clint Reach, Edward Geist, Abby Doll, and Joe Cheravitch, *Competing with Russia Militarily - Implications of Conventional and Nuclear Conflicts*, RAND Corp document PE-330-A, 2021, pages 2 and 9."**

**"It would be disastrous to have a conspicuous gap in the spectrum of deterrents and capabilities." - quotation from RAND Corporation's Herman Kahn, *On Thermonuclear War*, Princeton University Press, 1960, page 286. (Any gap in the "spectrum of deterrents and capabilities" is exploited by enemies, just as any gaps in a prison wall are not ignored but seized upon by escaping prisoners. A gap in the spectrum was created by the 1990s removal of tactical nuclear deterrents that deterred/stopped invasions, on the basis of populist lying anti-nuclear propaganda that the world would be safer as a result. It was only safer for warmongers, invaders and dictators. The world was in fact a "nuclear unarmed" place until 1945, but that didn't prevent nuclear weapons being made and used against Hiroshima and Nagasaki in 1945. So much for peace or even an aversion of nuclear war escalation risks in war, through nuclear disarmament. Also note that those nuclear weapons were made by a democracy in secret, and during a world war. How much easier was it for nations with smaller economies to produce nuclear weapons in secret during peacetime? It was certainly cheaper, since none could have afforded the billions spent by America's Manhattan project during WWII. So much for nuclear disarmament preventing war or even preventing nuclear warfare during a war that began in a world free from nuclear weapons. Again, when WWII began, there were no nuclear weapons. The nuclear weapons were made and used during the**

war itself, being made in secret by a democracy, and under a Democratic Party president. If this doesn't fit in with the nuclear disarmament hype you have been told, then you know they are liars.)

As the illustrations below from Dr Shelton's *Reflections of Nuclear Weaponeer*, a shelter well within the fireball radius of the first multimegaton hydrogen bomb survived 330 psi peak overpressure, and a 1.4 megaton W49 thermonuclear warhead detonated at 400 km altitude above Johnston Island as the Starfish prime test on 9 July 1962 produced EMP effects 800 miles away in Hawaii (colour photos on the front page of the 9 July 1962 Honolulu Star Bulletin, mentioning that streetlights were turned off and air raid sirens were activated - due to EMP). *The Russians later, on 22 October 1962, performed such an EMP demonstration with a 300 kt warhead detonated at 290 km altude, so they could use this type of "nuclear weapon demonstration" threat as an alternative to usual disarmament propaganda about nuclear weapons automatically being used to kill people by Hiroshima-type low altitude air or surface bursts:*





ABOVE: in the Cold War, Russia was deterred from invasions using a variety of tactical nuclear weapons including **2,100 W54 Davy Crockett tactical nuclear weapons**, and later - after the Russian invasion of Afghanistan began - 550 deployed W79 **thermonuclear 1.1 kt W79 neutron bombs** (to achieve a significant fusion yield with the very brief compressions available with a sub-kiloton fission yield, a second stage capsule of tritium and deuterium gas had to be employed, instead of the solid lithium-6 deuteride secondary stages that require neutron fission of the lithium-6 to produce tritium, prior to fusion; the x-ray compression at such a low yield was too brief to allow the fission stage neutrons to arrive at the secondary stage in time to fission enough lithium-6 prior to the x-ray compression pulse). The fission primary stage of the W79 shell uses **small-diameter linear implosion system** invented for a variety of purposes, both nuclear and non-nuclear, by US Government explosives expert Bernard Drimmer, and has now been declassified and published (after decades of being kept secret) as US Patent US5450794A/en, presented without the central fissile core for compression, as merely a method to increase to a maximum the efficiency of underwater explosives (just sticking a detonator into a lump of explosive leads to incomplete burning since some of the explosive ends up being blasted outwards into cold water before detonating; using the implosion system with the burning wave going inwards therefore maximises efficiency for non-nuclear torpedoes). The W79 deterred both massed troop invasions and also tank and APC invasions, since 14.1 MeV D+T fusion reaction neutrons penetrate armour very efficiently (even without the removable fusion capsules, the neutrons and gamma rays from 0.8 kt pure fission yield of the W79 was still a highly effective deterrent against Russian tanks; the fusion capsule reportedly added 0.3 kt of fusion yield, 80% of this or over 0.2 kt in the form of 14.1 MeV neutrons). Click for a **Secret (now declassified) Los Alamos report detailing why we need the W79 enhanced neutron tactical nuclear weapons to deter Russian expansionism** (report LA-12063-MS "The Future of Non-Strategic Nuclear Forces: Are These Capabilities Still Needed," dated 1991, [LINKED HERE](#)), and linked here with a previous **slightly different declassified version linked here** (which gives the names of the LA-12063-MS report authors, unlike the OpenNet version), ignored by left wing (discussed on [previous blog post linked here](#) - a brief extract from this 74-pages long report, containing detailed evidence that *tactical* nuclear weapons kept the peace in the Cold War much to the fury of Russia, is shown below; notice that tactical nuclear weapons are asymmetric in that they are more useful to deter invasions than to cause invasions, hence they are a stabilizing influence in crisis instability despite left wing propaganda to the contrary):



LA-12063-MS

This document consists of 74 pages

~~Nuclear Weapon Data~~  
~~Sigma 3~~

~~FORMERLY RESTRICTED DATA~~  
~~Unauthorized disclosure subject to~~  
~~administrative and criminal sanctions~~

~~SECRET~~

000015618

*The Future of Non-Strategic Nuclear Forces*

*Are These Capabilities Still Needed? (U)*

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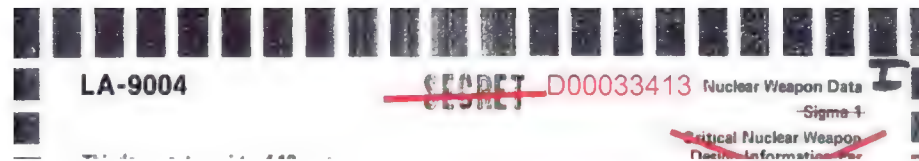
OSD  
b(6)

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April 30, 1991







THE ULTRA-LOW YIELD ANTITANK WEAPON

The Teeny Tiny Tacnuke (U)

by

Johndale C. Solem

Another declassified [Los Alamos neutron bomb report](#), Johndale C. Solem's 1982 Secret Los Alamos report LA-9004 ([LINKED HERE](#)) on the neutron bomb, The ultra-low yield antitank weapon, the teeny tiny tacnuke, complete with declassified markings showing it was "Nuclear Weapon Data Sigma 1: Critical Nuclear Weapon Design Information", in a limited edition of just 79

TM 23-200/OPNAV INSTRUCTION 03400.1C/AFM 136-1/FMFM 11-2

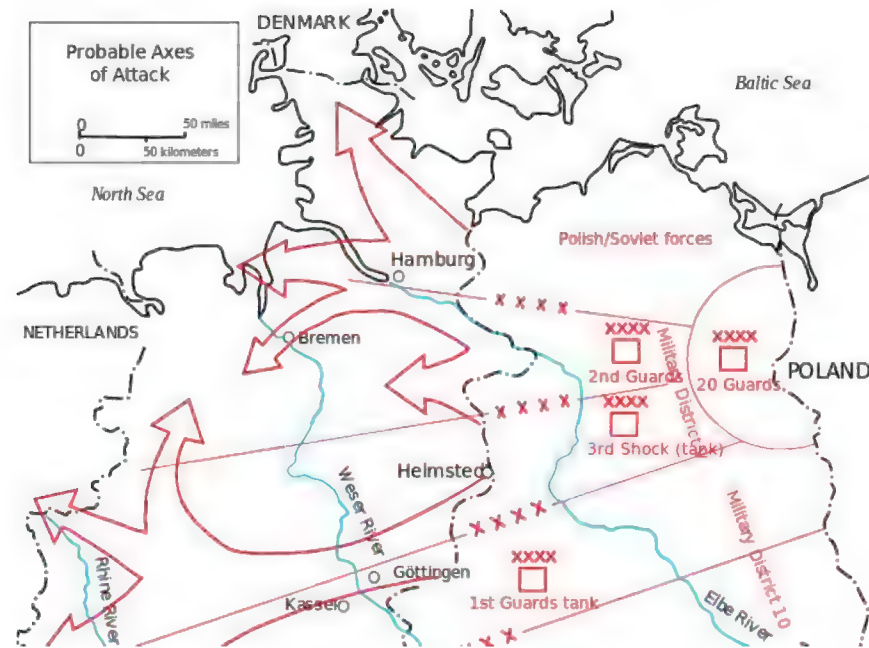
THIS PUBLICATION SUPERSEDES TM 23-200, OPNAV INSTRUCTION 03400.1B, AFM 136-1/NAVMC 1104 REV. NOVEMBER 1957, INCLUDING CHANGE 1, 24 JUNE 1960 AND CHANGE 2, 3 OCTOBER 1960 THERETO.

Table 7-5

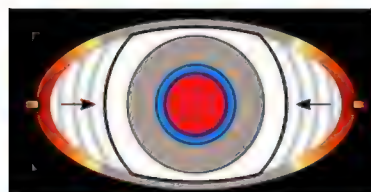
Dose Transmission Factors (Interior Dose/Exter

Geometry	Gamma rays	
	Initial	Residual

printed copies, secret (now declassified with deletions of design information) describes the kiloton W79 neutron warhead (44" long [note that there is a typing error, incorrectly stating it is 44 cm long in LA-9004], 200 lbs including firing system, capable of being fired 32 km from a 8" howitzer), and explains correctly that the whole point of such weapons is to deter the concentrated blitzkrieg assaults that started WWI in 1914 (the invasion of Belgium by concentrated force) and WWII in 1939 (the invasion of Poland by concentrated force). The principle of concentration of force can be deterred with nuclear weapons, thus preventing the invasions that trigger wars. By forcing enemies to disperse their forces, any attacks that are made can be dealt with using conventional weapons like handheld anti-tank rockets (no use against concentrated firepower, but useful against dispersed forces), preventing invasion and WWII (the map below is from the 1st Cold War, but demonstrates the kind of threat possible after completion of invasions of Ukraine and its neighbour/NATO supporter Poland):



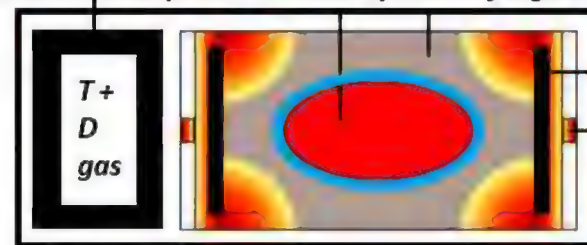
**W54 2-point prolate spheroid implosion warhead**



High explosive  
Beryllium  
Plutonium-239

**Comparison of 1961 W54 with 1981 W79 warhead**

**Removable capsule Pu-239 Cylinder of high explosive**



Disk-shaped steel plate  
(implosion wave shaper)  
Detonator

**W79 Enhanced neutron weapon with cylindrical linear implosion fission primary stage and removable 2nd stage**

"Denying an aggressor force the use of massed formations of armor is the single most important aspect of the W79."

LA-9004 then goes on to suggest a lower yield version of the W79 for use against individual tanks, like the Kennedy era portable 0.02 kt W54 that could be fired by individual soldiers, air burst at 15 metres altitude to eliminate local fallout, blast and heat collateral damage.

Page 5:

"Tank crews within 25 m of the weapon would be immediately incapacitated. Civilian populations 300 m from the point of detonation would be completely safe. ... Beyond 300 m, exposed personnel might be temporarily blinded from looking directly at the detonation, but would suffer no burns to exposed skin. ... The effect of blast on civilian structures near the battlefield would be trivial. Three hundred metres from the point of detonation windows would rattle but not break. ... the fallout would be expected to be confined to the battlefield itself. ... The principal advantage of such a device in reducing collateral damage from local fallout is that it simply does not produce much in the way of fission fragments or activated weapon debris."

LA-9004 then points out, on pages 7-8, that such a **defensive low yield weapon with no significant risk of collateral damage is of no significant use to terrorists, contrasted to easy-to-procure alternatives.**



~~SECRET~~

Los Alamos report LA-4350-MS

~~SECRET~~

<https://www.osti.gov/opennet/detail?osti-id=1042>

LA-4350-MS

**RIGHT: a Secret  
neutron bomb report  
shows that 1 kt of T-**

SURFACE DOSEAGE FOR 1 K  
BURST HEIGHT = 75

PROCEEDINGS OF THE  
TACTICAL NUCLEAR WEAPONS SYMPOSIUM



ABOVE: the **405-pages, originally Secret 1969 *Proceedings of the Tactical Nuclear Weapons Symposium*, Los Alamos document LA-4350-MS, has been declassified and is available on Opennet (pdf is LINKED HERE)**. For 1 kiloton of D-T fusion air burst at 750 feet altitude (for the W79 this fusion yield is reportedly 0.3 kt, so you multiply the following doses by 0.3, before adding on the fission dose from 0.8 kt of fission), Dr Hudson's Lawrence Radiation weapons lab article "Clean nuclear explosive research applicable to tactical nuclear weapons (Secret-RD)", applying clean fusion tests research to peace-making deterrent purpose in the 1969 conference LA-4350-MS, shows that the unshielded dose at a 1,000 ft ground radius or range (i.e., distance from ground zero, not the slant distance from bomb) is 800,000 R (85% being neutrons), falling to 100,000 R at 2,000 feet (75% being high energy neutrons, with the rest being high energy gamma rays from inelastic neutron scattering by the air), and 10,000 R at 3,000 ft radius, but a relatively trivial 10 R at 7,000 ft radius, preventing collateral damage to nearby civilians. **The U.S. Defense Nuclear Agency assessed that immediate permanent incapacitation for all tasks occurs at 18,000 R, or 8,000 R for physically demanding tasks, while 3,000 R produces immediate temporary incapacitation.** The original 1972 secret Capabilities of Nuclear Weapons DNA-EM-1 gives initial radiation data for 8 designs of nuclear warhead, but it was revised and expanded to 13 designs in the 1984 edition. However, the neutron outputs from three of these are practically identical: nuclear warhead types 4 and 7 (1-30 kt boosted two-point implosion and 1-10 kt multipoint implosion) and 11 (30-300 kt cleaner tactical nuclear warhead), all giving about 83.6 rads per kiloton at 1 km ground range for a surface burst on unobstructed silicate soil in sea level density air, plus about 28 rads/kt of secondary gamma rays (the fission product initial radiation dose is independent of bomb design details apart from fission yield and total yield, being 19.3, 332 and 13,000 rads for 100% fission total yields of 1, 10 and 100 kt). For comparison, nuclear warhead type 13 in EM-1, the 1-2 kt enhanced neutron warhead produces about 20 times that dose (1,660 rads/kt of neutrons and 450 rads/kt of air secondary gamma if surface burst; a 1 kt "type 13" neutron bomb air burst at 500 m altitude gives a dose at ground zero of 170,000 rads of neutrons plus 27,200 rads of secondary gamma rays, according to EM-1). At the other end of the scale, the lowest neutron dose, just 0.666 rads, is produced by the type 10 in EM-1 (the low-yield fission primary stage "dial a yield" option of a B61 thick-cased thermonuclear weapon having multiple yield options). This is because the outer casing on a weapon with high yield options absorbs most of the neutrons from the primary stage, and thereby shows that *you cannot simply use the low-yield option on a B61 as a replacement for tactical nuclear weapons like neutron bombs.*



Weapon Yield	Overpressure (psi)	Triple-Point Burst Height (m)	Slant Range (m)	Tissue Dose (rads)			Total <sup>c</sup>
				Neutrons	Secondary Gamma Rays	Fission-Product Gamma Rays	
40 kiloton	5 10	1210 900	2358 1470	~1 200	4 320	<1 45	5 565

Note that once NATO C3I command is neutralised by Russian nuclear forces, e.g. **EMP high altitude burst effects** if not blast and nuclear radiation from surface or low altitude bursts, blitzkrieg by troops protected by armour enables rapid invasions, even in fallout radiation areas (**tanks and APCs offer good shielding against the low energy gamma rays from fallout, unlike the higher energy initial flash of gamma rays and neutrons**). When on 8 December 1991, the presidents of Russia, Belarus, and Ukraine dissolved the USSR, the Soviet military was 3.7 million strong. **"From 1945 to 1948, the Soviet Armed Forces were reduced from about 11.3 million to about 2.8 million men"**, while the Soviet Union actually increased in size, as puppet governments were installed across half of Europe, despite the American nuclear weapons monopoly until 1949. Today, with the tactical nuclear deterrent removed from Europe, it is only necessary to blow up the military and political bases in Europe to destroy its capacity to harm Russia by economic warfare and military support to enemies of Russia. A business which puts its rivals out of operation becomes a monopoly. It doesn't necessarily have to send in huge numbers of "boots on the ground" to physically occupy all the destroyed rival business offices in order to succeed in "winning" the war; remember that in both the Third Reich and USSR/Warsaw Pact/Iron Curtain era, occupied countries were put under puppet governments (Vichy France, etc.) in a thinly camouflaged effort to portray the occupation as a mutually cooperative "peace initiative" (i.e., "you will do as we say, then we won't shoot you and blow your cities up, how's that for peacekeeping collaboration?").



**X-ray mirroring: secondary stage**

Capsule with  
ablator and fuel

Ablator, low-density  
fuel



Slow Explosives    Hollow Core "Pit"    **Declassified patent: <https://patents.google.com/patent/US5450794A/en>**  
 (linear implosion devices also used in non-nuclear torpedoes)



To give some idea of the complexity (the diagrams above are open-source, unclassified, not to scale, and demonstrating principal concepts pictorially rather than as design blueprints) of the compact 1950s designs of tactical warheads that now form the primary stages in American two-stage missile warheads, **[please see the biography of John S. Foster, Jr., the Lawrence Livermore National Laboratory physicist who led the designs of the compact primary stages needed for compact SLBM and MIRVed ICBM warheads. The quotations about the history of the modern primary designs that follow are from T. F. Ramos, \*Call Me Johnny\*, Lawrence Livermore National Laboratory, report LLNL-BOOK-783447, 2019:](#)**

"Much of the effort to design an atomic device relied on using a computer program, or code, to guide the designers. The group's computer code support came from Bob LeLevier and Chuck Leith. Leith was a real computer pioneer. He had written out the Laboratory's first codes on one of the world's first computers, the UNIVAC. The physicist Jim Wilson, who was a distinguished graduate from UC Berkeley and a member of T Division, was yet another code developer, and became Johnny's technical leader. In 1954, in a series of nuclear tests called Operation Castle, the Laboratory had once again fielded a shot that failed. This was a test of a Megaton Group secondary. It was the

third successive nuclear test failure of the Laboratory. There were powerful men in Washington, DC who wanted to see the new Laboratory in Livermore shut down. The stress of the failure had its effects on Lawrence and Teller, and they both suffered from attacks of colitis and had to be hospitalized. Herb York came down with Valley Fever and had to remain at home in bed rest. That meant that the future of the nuclear weapons program at the Laboratory rested squarely on the shoulders of Johnny Foster and Harold Brown. ...

"Johnny was especially interested in designing a weapon for the Army, which during the Korean War, had experienced massive "human wave" attacks of Chinese soldiers – assaults that had almost destroyed Eighth Army. The Chinese Army attacked with large, closely packed formations that overwhelmed American defenses. Chastened, the Army wanted a nuclear artillery shell that would deter any nation from using those tactics again on a battlefield. ... He did not know it, but a team of Los Alamos engineers and technicians had developed a diagnostic technique called a pin dome that could measure how a device imploded. ... The Cleo was a tactical weapon, suitable for the Army, and it promised to be one of the smallest atomic devices yet developed. The Cleo concept required multidimensional modeling to fully understand its workings, and Jim Wilson performed Cleo calculations on new codes that he wrote. But even with Wilson's talents, multidimensional computer codes were primitive affairs in 1954. ... For its transport to the Nevada Test Site, the Cleo was constructed in two parts, and each part was placed into a reinforced Samsonite suitcase [Cleo was tested in Nevada on 1 March 1955 as 7 kt Teapot-Tesla, atop a 300 ft tower. The predicted yield was 3.5-7kt. It was only 10 inches wide, 39.5 inches long, 785 lb, and used an external Zipper neutron gun. An even smaller version, Cleo II, was tested as 2 kt Teapot-Post on 9 April 1955, 34.2" long, weight 322 lb]. ... The Cleo had worked; the first warhead from the Laboratory to do so. Someone, apparently, had leaked information out about how the device had been delivered to the tower. Time magazine wrote a story about a new type of nuclear weapon that could fit inside a suitcase. ... Lawrence opened a discussion by asking, "Why do we need small diameter nuclear weapons?" Teller responded that they were needed for nuclear artillery, which had been identified as a need for the Army."

**- T. F. Ramos, "Call Me Johnny", Lawrence Livermore National Laboratory, report LLNL-BOOK-783447, 2019, p. 19-22, <https://www.osti.gov/servlets/purl/1576166>**

"For the tests of 1956, Johnny organized the Hectaton Group into three teams; each team was responsible for designing an atomic device that deviated from the other devices in some way. He instituted a protocol that named each new device after a bird, and the three devices were called the Swan, the Swallow, and the Swift. They were radically different from the Cleo. ... The Swallow came the closest to resembling a nuclear artillery shell. The Swallow's design had to be strong enough to withstand the high torque and acceleration it would experience after being fired from an artillery tube. ... The smallest device was the Swift. The Swift team was led by an Air Force captain named Jasper Welch, who would eventually rise to the rank of major general. ... With the coming of summer 1956, Johnny moved his entire group to Eniwetok. ... There were huge clams living inside the atoll, and Johnny wanted to take home a large clam shell. ... When he

came to the surface for air, Johnny noticed several sharks circling in the lagoon a hundred yards away ... A Hectoton physicist named Larry Germain [[Lawrence S. Germain, author of the LLNL history of tactical nuclear weapons and related thermonuclear primary stages, see illustration; above from our compendium of declassified data linked here](#)], who always wore a pair of thick glasses, was treading water nearby, and Johnny asked him to watch out for the sharks and warn him if they began to get closer. ... When he resurfaced, there was no Germain, and Johnny noticed that the sharks were coming closer. He swam back to shore, and spotted Germain lying on the beach. When he asked Germain why he had left his post, the bespectacled physicist responded, "Well, I thought about what you said about there being sharks in the water, and I decided to get out of there."

"It was time to test the devices, starting with the Swift [0.19 kt Redwing-Yuma, 27 May 1956, 5 inches in diameter, 24.5 inches long, weighed 96 lb.] . It was tested atop a 200-foot tower. It gave a low yield, about one-fourth of what had been expected. This was not an encouraging start. ... they would have to wait and see how the other designs worked. That opportunity came two weeks later, with the test of the Swallow [1.49 kt Redwing-Kickapoo, 13 June 1956, 8 inches in diameter, 28 inches long, weighed 225 lb] atop a 300-foot tower. The mediocre performance of the Swift made the mood tense. ... the Swallow performed well, rendering a yield greater than had been predicted. The Army had wanted a tactical nuclear device, and it looked like they may now have one. Next it was the Swan's turn. When test day arrived, the same controls that had detonated the Swallow now triggered the Swan, which lit up the South Pacific sky and gave a yield in the upper part of its predicted range of values, which was gratifying [[Swan, reported to be a boosted a two-point ignition hollow-pit air-lens flying plate slapper device, aka XW-45](#), was tested as the 15.2 kt Redwing-Inca nuclear test on 22 June 1956, with a mass of 47.6 kg, a length of 58 cm and a diameter of 29.5 cm. On 2 July 1956 it was used as the primary stage of the 360 kt Redwing-Mohawk test which used a Flute secondary stage. Mohawk was 15 inches in diameter, 46.2 inches long, and weighed 1116 lb]. This was the mothership of their atomic designs – the main hope for the Hectoton Group – and it had performed well. ... At a meeting held back in Livermore in August 1956, Johnny announced, "A study named Robin has been started on a different method of implosion [Dr Peter A. Goetz states the Robin was melon shaped in *A technical History of America's Nuclear Weapons*, v2, revised edition 2020, p209: "The Robin contained a hollow, boosted, plutonium core that resembled a "thick eggshell" ... Instead of using a shockwave to shape and compress its core ... Robin relied on deflagration ... burning ... at subsonic velocities ... the explosive envelope of the Robin primary was composed of PBX9404 (94% HMX) and its core was composed of alpha-phase Pu239, the densest known allotrope ... 19.89 g/cc"]. It aims to achieve a device characterized by light weight, ruggedness, and moderate efficiency." ...

"They quickly converged onto a design that was a marvel to study. There were originally two versions of the Robin, Robin A and Robin B. The first A version used enriched uranium as its nuclear fuel, and it was cumbersome. The second version, Robin B, had a plutonium pit and when it was tested, it performed exquisitely. The Robin B was a true descendent to the original Geode concept. It was light and rugged, and it gave a significant yield. When the Robin B team was done, the device could be carried by one man. ... The Robin never showed up in America's nuclear stockpile; that was not its legacy. It was much more important than that. It became the foundation upon which to build warheads for the future. It was the ultimate fission weapon, the prototype used to build the country's modern stockpile. [However, Robin primaries were used in the 1963 Lawrence Livermore Lab W47Y2 X1 warhead, with an oralloy (U235) Fife secondary stage, for the Polaris A2 SLBM. In 1965, when tests showed that 75% of these 144 Robins failed due oiled neutron absorbing wire corroding permanently into the plutonium core of the Robin primary - this cadmium-boron wire was supposed to be pulled out by a small electric winch motor automatically before detonation as a safety system to prevent nuclear yield release in accidents - the Robins were replaced by 10kt boosted linear implosion Kinglet primaries. The Polaris A-3 carried three 200kt W58 thermonuclear warheads, the first

American deployed devices with spherical or alloy loaded Tuba secondaries, Kinglet primaries and thorium casings. Polaris was important not only for giving a protected second strike capability to the West, eliminating the dangerous need for launch on warning and a first strike to avoid missiles being hit first like sitting ducks in a surprise strike by the enemy, but also for replacing regional land based missile systems. For example, the old vulnerable Jupiter missiles in Turkey which Kennedy removed in "exchange" for the removal of Khrushchev's missiles in Cuba, were simply replaced in March 1963 by the USS Sam Houston SSBN-609, an A-2 Polaris submarine using a base at Rota in Spain. So Khrushchev actually improved American nuclear deterrence by asking for the junk Jupiter missiles to be removed from Turkey!] "

- T. F. Ramos, "Call Me Johnny", Lawrence Livermore National Laboratory, report LLNL-BOOK-783447, 2019, p. 23-27,  
<https://www.osti.gov/servlets/purl/1576166>



# The Tsar projectile

by V. SHIRIN

*Almost everybody has heard about the Soviet nuclear and thermonuclear bomb projects that strengthened the victory in the Second World War and saved the world from the threat of a new global catastrophe. However, not many people know the story of the artillery-fired atomic projectile.*

ABOVE: the Russian's took *three years* to develop their first small-diameter two-point linear (long-axis compression) implosion "Melon" device, without using computers, which was tested with success (full design yield) in March 1956. An illustrated article, *The Tsar*



*projectile for nuclear artillery*, by one of its developers, Dmitry V. Shirkov (in charge of predicting the yield, not so easy for a radical two point linear implosion device if you don't have any computers!) is [linked here](#), see also the [page here](#).

### NEUTRON BOMB AND PAL SECURITY PIN NUMBER SYSTEM:

"The Soviet Union maintained a huge army in Eastern Europe that was poised to launch itself against the democracies of Western Europe, especially West Germany. Its 96 divisions consisted mostly of armored forces and mechanized infantry tanks and soldiers mounted in armored vehicles. B Division physicists came up with an idea for a weapon that could be used against Soviets tanks in an invasion. Their idea was to attack Soviet tank crews without destroying the surrounding West German countryside by detonating the weapon at a high altitude. The weapon was called an enhanced radiation warhead because it could release more radiation, especially neutrons, aimed at tankers while having a reduced blast. It would deter the Soviet Union from launching an armored attack against the West. Johnny decided that the enhanced radiation warhead qualified as a valid weapon to test in the new operations.

"The RAND Corporation, a so-called "think tank" headquartered in Santa Monica, California, is used by the Department of Defense for studies related to national security. From its earliest days, analysts from RAND visited the Laboratory to observe how the country's nuclear weapons research was progressing, and true to form, a RAND analyst named Sam Cohen visited Johnny to ask what was new. Johnny described the enhanced radiation weapon they were testing, and Cohen exclaimed, "You've invented the neutron bomb!" Cohen went back to his office in Santa Monica and wrote up a report in which he described what he had heard about the new weapon, and he claimed that he had invented it [[this is inaccurate and relates to a later meeting in 1962 not Cohen's key visit in 1958, according to Cohen, and Johnny wasn't developing a neutron bomb to end world wars, but cleaner, low yield thermonuclear weapons "Dove" and "Starling" for project Plowshare, and it was him - Cohen - who in 1958, after looking at the "Dove" and "Starling" designs, asked for their neutron outputs off his own back, and then put together the collateral-damage-averting two-stage 1-2 kt enhanced neutron air burst concept for deterrence of invasions!](#)]. The weapon underwent development over the years until it was ready to be deployed with NATO troops. ...

"Six months after the crisis over Berlin, [President] Kennedy flew out to Berkeley to receive an honorary degree from the University of California [23 March 1962] ... The nuclear warheads that Kennedy had relied on when he faced Soviet threats had been designed by these very same scientists, and Kennedy wanted to thank them personally. As Director of the Laboratory, Johnny would be giving the President a briefing to show him the warheads that were part of the backbone of the nation's defensive posture. ... Full-scale models of the Polaris and Minuteman warheads were placed on demonstration tables, and Johnny showed the President the strategic warheads. After that, Johnny planned to give a pitch for an idea he had conceived the year before concerning the security of tactical nuclear weapons. He had an idea about how to protect the weapons, and he initiated a program to design a sophisticated anti-theft system that came to be called the

Permissive Action Link (PAL). ... ; Johnny explained the PAL concept and Kennedy became animated with the demonstration and pulled up a chair and sat before the device. ...

"The President liked the idea and agreed with Johnny's approach to solving the problem. Kennedy asked his Presidential Science Advisor, Jerome Wiesner, to look at the matter more deeply, and Wiesner replied on May 29, 1962, that the approach seemed to be a good idea and a timely solution to a national security need. On June 6, Kennedy issued National Security Memorandum No. 160, which directed the Department of Defense to install PAL systems into selected nuclear weapons, principally those in NATO. On July 6, 1962, the New York Times reported, "President Kennedy asked Congress today for \$23,300,000 to install electronic locks on nuclear weapons in this country and abroad as a safeguard against accidental or unauthorized firings." "

- T. F. Ramos, "Call Me Johnny", Lawrence Livermore National Laboratory, report LLNL-BOOK-783447, 2019, p. 31-33, <https://www.osti.gov/servlets/purl/1576166>

"Into the 1960s, Los Alamos and Livermore were designing primaries that were huge by today's standards. This changed, beginning in 1967 and into the early 1970s, with the Defense Department's drive to obtain smaller, lighter, and more efficient (greater yield for the weight) primary designs: primaries that would then reduce the size and weight of the entire warhead. The Defense Department's goal was to develop ballistic missiles that would carry multiple, independent reentry vehicles (MIRVs) aimed at multiple targets. Such warheads required a revolutionary new primary design. At Livermore, Seymour Sack's smaller, lighter, and more efficient primary design was reasonably well developed. His was the leading design for a MIRV warhead used on the Minuteman and Titan II missiles. To successfully advance upon Sack's design [Robert K.] Osborne, who had experience working on a previous effort to improve primary designs, took the lead on the Los Alamos design efforts. His result, after designing and testing multiple variations, was the primary used in the W76 warhead that arms ballistic missiles carried on the Navy's Trident-class nuclear submarines. The W76 is the most numerous warhead in the U.S. nuclear stockpile." - Jeremy Scott Best, *The Giants of the Nuclear Testing Era: The Works of Robert K. Osborne*, Los Alamos National Laboratory report LA-UR-18-27654, 2018, page 8.

#### HERMAN KAHN'S MUNICH ANALOGY FOR NUCLEAR COERCION BY A RUSSIAN DICTATOR

**Munich September 30, 1938:** in exchange for a worthless paper agreement promising "peace", Chamberlain allows Hitler to invade the German populated part (Sudetenland) of Czechoslovakia, declaring the need to peacefully protect its own foreign nationals (Germans) living in other countries. Big fuss in media: talk of sanctions, weight of world's opinion weighing on shoulders of Hitler to restrain him - proving that appeasement has allowed Britain time to rearm slower than Germany, thereby removing any real deterrent, and reassuring

Hitler that we are committed to "peace in our time". (He had already annexed Austria, but that was permitted just like Crimea's annexation by Russia in 2014.) Six months later - after world's media has "moved on" - the remainder of Czechoslovakia was invaded by Hitler (March 1939). Next invasion (12 months after invasion of Sudetenland of Czechoslovakia): Poland (September 1939). Chamberlain has finally drawn a line in the sand (after years of him and his predecessor Baldwin rearming the UK slower than Germany, allowing any hope of deterrence to slip away, by permitting an enemy to go from no threat in 1933 to a bigger military than the UK, *requiring UK rearmament, prior to any credible deterrence being feasible*\*): he finally tells Hitler invading Poland will provoke war. But given the previous farce, Hitler is not deterred by the paltry level of UK rearmament (compared to Germany), and invades Poland.

Note that once the remainder of Ukraine is invaded by Putin - he has already condemned the government of Ukraine as a danger for fighting to defend parts of its own country that border the Russian bear, so everyone can see where the ship is headed - he will be in Hitler's situation in 1939, since Ukraine has a direct border with Poland. The next replay of history will be that "Poland has been a member of NATO since 1999, and NATO presents a threat or antagonism to Russian occupied Ukraine, which must be neutralised to preserve the peace of mind of Putin and his comrades. If NATO tries to defend its members from further Russian peace keeping invasions and conquests, then Putin/Russia will be forced, regrettably, to use its ICBMs etc. to defend itself, and since America has no ABM since the Safeguard system was defunded by Congress anti-nuclear fanatics like Biden in 1975, goodbye democracy." Also note that Putin has more nuclear warheads and Novichok nerve gas than the West. **(Until 22 June 1941, Russia was on Hitler's side and jointly invaded Poland in September 1939, contrary to all airbrushed Russian school history books; and all left wing UK school history books! The reality is the secret annex to the 23 August 1939 Russian-German Molotov-Ribbentrop so-called non-aggression pact, which led to the invasion of Poland by Germany and Russia on 1 and 17 September 1939, respectively, according to which Poland was divided up between the two invaders, Russia and Germany; a fact that Russian and left-wing Western pseudo historians have sought to ignore, play down or cover-up. The point is, there is an historical precedent here to Russian aggression in Europe, despite propaganda denying it.)**

Russia could invade not only Ukraine but Europe, if you look past troop numbers to the Russian nuclear and chemical missile stockpile in relation to the West's, which has been depleted (Joe Biden as an anti-nuclear senator for decades was always pushing for Western arms reduction, encouraging enemy aggression). Once Ukraine is invaded by Russia, Poland will be on the new Russian border. It's quite possible that if the chips go down and blitzkrieg becomes the order of the day, NATO will collapse. It just doesn't have the firepower of Russia, undermining deterrence. Kennedy deployed 0.02kt yield W54 tactical battlefield nuclear weapons to Europe to deter invasions. **(Little Feller I, on 17 July 1962, proved the W54 - reportedly a scaled down 2-point prolate spheroid implosion Swan device - to observer Attorney General Robert Kennedy, in the last ever atmospheric nuclear test at Nevada Test Site, the film of which was only declassified on 22 Dec 1997. Fired by a crew of two using a 155 millimeter launcher, it detonated at a height of burst of 20 feet, some 1.7 miles from the launch point with a 0.018 kt measured yield. An identical warhead was tested as Little Feller II, 10 days earlier, gave 0.022 kt, also demonstrating a W54 yield reliability of 0.02kt +/-10%.)** After Nixon decommissioned them, Carter and Reagan replaced them with W79 tactical nuclear warheads, which remained a credible deterrent against invasions (unlike trying to deter the invasion of Crimea by saying you will bomb Moscow) until the Cold War ended. The USSR collapsed. Then people like Biden lobbied successfully to get rid of tactical nuclear weapons in the 90s, and now we don't have a credible deterrent. How can a threat to put sanctions on Putin, or to bomb Moscow as a last resort, deter an invasion of the Ukraine, when he has a bigger nuclear stockpile plus chemical weapons like Novichok? It's insanity. End of story.



We have experience of this insanity from disarmament propaganda by enemies of liberty, freedom and democracy, not just from Hitler's invasions in the 1930s, but from Stalin's invasions in the 1940s and his successors until the Cold War supposedly ended with the break up of the USSR: America had a monopoly on nuclear weapons until 1949, but it failed to make enough, quickly enough and was unable to use nuclear weapons as a credible deterrent to prevent Stalin from seizing half of Europe after WWII. Puppet governments controlled by Moscow (backed up by tank invasions whenever the strings on the puppets broke, e.g. Germany 1953, Hungary 1956, Czechoslovakia 1968) *put tanks on the border of NATO. Then, tactical nuclear weapons were needed until the end of the Cold War to prevent invasions. When they were not there, invasions occurred. When they were available, invasions didn't occur. QED. They tipped the balance of risk against aggressors in a way that sanctions and massive retaliation bluffing doesn't.* Biden and comrades in the 70s used the old 30s mythology of "arms control" to try to get rid of credible deterrence. The typical argument is that deterring world wars using the credible deterrence of tactical nuclear weapons is "dangerous" to people planning invasions. That's the whole point. The nuclear fear mongering issue of the much higher background radiation in the mile high city of Denver (if you are fanatical about radiation, then why not start by banning mountain climbing, high altitude cities, aircraft, etc, rather than the fallout from nuclear technology?), also occurs with nuclear weapons deterrence: if you think high yield nuclear weapons that could cause collateral damage are a problem, then why not campaign positively for the tactical weapons that deter the invasions that triggered world wars (the invasion of Belgium in 1914, and Poland in 1939) in place of strategic warheads which fail to deter invasions? If we only have tactical nuclear weapons, we can only stop invasions and there can be no escalation risk. In both cases, it's obvious that the anti-nuclear folk are conning the media, successfully as their forebearers did in the 1920s and 1930s. **This was the case also in the 1920s and 1930s when poison gas bomb scare mongering was used in the media to successfully prevent credible deterrence, tragically resulting in world war and tens of millions dead. As the Cold War proved, even carrying a big stick is no deterrent if you speak softly to make it appear incredible. The squealing from the pro-Russian so-called anti-nuclear media folk against the W79 neutron bomb 40 years ago proves that was a credible deterrent (they wouldn't have cared otherwise).**

The Western media outlook until a few days ago was that the 150,000 or so Russian troops around Ukraine was just the normal Russian military training exercise, pushed nearer the Ukrainian border for added realism, and such numbers are not enough to occupy Ukraine or Europe, so there can't possibly be a real problem, just American bear-baiting propaganda. Not so. Again, as we saw in the Cold War conquest of Eastern Europe, and even before that in the Third Reich era, you don't actually need huge numbers of boots on the ground to successfully invade countries. All dictatorships are by definition a minority controlling a majority - if it were the other way around dictatorship would not be needed since democracy is a numbers competition where the majority tribe or party wins (even if they have to rely on postal ballots). In any case, secret police (Stasi for instance, in East Germany in the Cold War) did the major job of controlling dissent, not Russian boots on the ground. The primary techniques used are political infiltration, coercion, media subversion, propaganda, fear, and political concentration camps/Gulags for dissidents, which massively reduces the need for large numbers of troops. Putin's seizure of Crimea was done using Russian special forces with their insignia removed from their uniforms. There are lots of tricks involved in warfare to reduce the troop numbers required for invasions. Putin's latest one, officially "recognising" the separatist Russian-infiltrated parts of Ukraine bordering Russia and its sphere of influence, doesn't require a million boots on the ground. Like Hitler's annexation of Austria or Sudetenland, you can "invade" with a token force once you have infiltrated it first by stealth. This was the whole point of Hitler's "peace" propaganda machine in the UK in the 1930s, and the USSR's World Peace Council. Invasions occur at first by reasonable appearing salami tactics: small "peace keeping" incursions are then followed by support to rebels until those rebels mount an assisted coup

d'etat or declare a separatist state in their region. **Then the process is simply repeated to get further slices, until the rebel numbers become big enough for blitzkrieg to be a success.**

ABOVE: **1974 USSR nuclear weapons design poster showing critical masses under different conditions**, pointing out that using implosion for compressing a subcritical 12 kg mass of U235 makes it critical, compared to needing 48 kg (a 16.8 cm diameter sphere) for a critical mass of uncompressed U235. Switching to Pu239 reduces this by a factor of 2.82, while enclosing it in a 10 cm thick neutron reflector reduces the bare sphere critical mass by a further factor of 3.42. A combination of using both a neutron reflector and core compression can produce better than a 10-fold reduction in critical mass, according to Russian nuclear weapon designers. The simple Russian Sakharov-Zel'dovich elliptical thermonuclear design published by Uwe Parpart in the 15 October 1976 issue of *New Solidarity* allegedly originates at least in part from the July 1976 disclosures at U.S. labs by Soviet physicist Dr Leonid I. Rudakov, which also led to an earlier 8 October 1976, article in *Science*, entitled "Thermonuclear Fusion: U.S. Puts Wraps on Latest Soviet Work", page 166. (In March 1976 Pravda claimed Dr Rudakov had solved the clean fusion power problem using implosion principles.) The Rudakov principle demonstrated how hard radiation energy from the primary (fission) stage of a nuclear weapon is reradiated by a plasma as soft x-rays, to compress fusion fuel at the focus of a 1950s Russian nuclear weapon ellipsoidal radiation case. According to Chuck Hansen, the first American nuclear test using this Sakharov-Zel'dovich ellipsoidal radiation case was the Egg design, fired as the successful 250 kt Redwing-Huron shot at Eniwetok Atoll in 1956 (this is according to **Sybil Francis, *Warhead politics: Livermore and the competitive system of nuclear weapon design* page 131**; it also used a spherical secondary stage - the L-3 concept referred to by Francis - which wasn't liked by the USA - unlike Russia and Britain - because of the complexity of doing 3-d computer calculations for the geometry spherical isotropic compression in the 1950s; spherical secondaries were first deployed by America in miniature thermonuclear weapons in 1963, namely the 200 kt, 117 kg Polaris warhead W58 and the 170 kt, 115kg Minuteman warhead W62, while Britain and Russia had by then stockpiled weapons with spherical secondard stages for years). **Dr Friedwardt Winterberg mathematically analyses the use of an ellipsoidal radiation case with fission and thermonuclear stages at the focii, in his 1981 book *The physical principles of thermonuclear explosive devices*, Figure 4 (below), explaining how x-rays of varying energies can be mirrored. Even so, you can**

**make paper calculations that are testable in the field, without requiring 3-d computer simulations, as proved by the 1950s British and Russian programmes.**

The American insistence on fuller theoretical analysis prior to testing was bureaucratic time-wasting. It was Teller's less dogmatic Livermore that took up the discarded excellent Los Alamos Huron spherical secondary in 1958, testing to develop warheads not unlike today's contemporary designs. The need for complex computer design simulations may be averted by simple "overkill" to compress and ignite fusion charges using x-rays from *multiple* stages, bombs within bombs like a Russian doll to avoid the need to enhance the primary stage yield using tritium gas with its 12.3 years half-life (as shown, Howard Morland's use of the 1958 lithium deuteride stage idea in

his book reproduces an actual design tested in the 1960s called "Swiss cheese", in which the fusion stage contains several separate subcritical lumps of fissile fuel which release neutrons into lithium deuteride, as an alternative to Teller's original cylindrical "spark plug" idea). These weapons are very simple to service, and incorporate "reliability through redundancy", since the multiple fission primary stages allow for reasonable thermonuclear efficiency even if one primary stage fails for some reason. The accompanying official limited distribution Russian nuclear weapons employment manual, *Nuclear Weapons - A Manual for Officers*, which we obtained (all three editions) from Ukraine, has photos of Russian MIG-15 fighter jets and tanks which were exposed to nuclear tests by Russia (see illustrations below), and many tables and graphs showing the measured blast and radiation effects of 8, 30 and 150 kiloton yield nuclear tests on different targets, plus thermal effects from a 50 kt test, and is [linked here](#) - **these confidential Russian nuclear weapons capabilities manuals differ drastically from Glasstone's American exaggerations for propaganda on nuclear effects, e.g. Table 3 in the 1961 nuclear test data compilation shows very different data on thermal effects to Glasstone's Effects of Nuclear Weapon. Russian test data from a 50 kiloton burst shows glass only begins to melt at 700-800 cal/cm<sup>2</sup>, while white boards only ignite at 150 cal/cm<sup>2</sup> (although they temporarily smoke or char at 40 cal/cm<sup>2</sup>)! (Note that in the Russian tables, кал = cal.) The Russians also show how building skyline shadowing stops most direct radiation.** We also uploaded extracts from the **128 pages standard Russian manual, *How to operate in the conditions of application of nuclear, chemical and bacteriological weapon*, by the USSR's Department of Defense, Moscow, which has 99 illustrations, and other Russian manuals linked here**, and there is a **Russian translation of the Glasstone propaganda book here**.











**Further reading:** a complete analysis of this invasion situation is included in our 2015 detailed review of Kahn's *On Thermonuclear War*, linked [here](#) (in summary, sanctions can escalate such situations into all-out war; so the people talking about "hard-hitting" sanctions, who don't and won't have either a credible nuclear deterrent to prevent invasions or civil defence to withstand enemy threats, are effectively - despite their lies to the contrary - the warmongers). In Chicago, on 5 October 1937, President Roosevelt (Democratic Party) gave his "quarantine the aggressor speech", to destroy fascist dictatorships without the need for military deterrence: it failed since Japan had hard-hitting sanctions placed on it by America, after it started expanding by force prior to WWII, which led to the Pearl Harbor attack and the Pacific Theatre of WWII, instead of peace. If someone is pointing a large nuclear stockpile in your direction and is hot-headed enough to use Novichok nerve agent and Polonium-210 radioactive agent to kill people in the UK during "peacetime", then what is going to happen if you put hard hitting sanctions on them? Their media will present it as being an act of war; it will provide the excuse to escalate the situation. This sanctions idea, like disarmament for peace, is an example of groupthink autism, whereby nonsense propaganda is used to saturate the media to submerge the key facts, just as occurred in the 1930s when the media became obsessed with proclaiming that appeasement would produce "peace in our time". Some relevant extracts from UK declassified Cold War manuals can be found [here](#) and the Russian nuclear weapons employment manuals we obtained from Ukraine prior to the invasion are linked [here](#).

Putin's Kremlin instagram post on 8 December 2021 stated (in Russian): **"Experts spoke about the reasons for the negotiations between Vladimir Putin and Joe Biden. Sanctions do not threaten Russia, and the United States is interested in dialogue, said Vladimir Vasiliev, chief researcher at the Institute for the USA and Canada of the Russian Academy of Sciences. "The American side is interested in these negotiations. Today, all this talk about the sanctions list, about some other use of sanctions weapons like Nord Stream 2 or List 35, some other measures, I call this the "formula divorce." ... According to the Kremlin press service, Vladimir Putin told Biden during the talks that Russia is interested in receiving legally fixed guarantees that exclude the expansion of NATO to the east and the deployment of strike offensive systems in Russia's neighboring countries. At the same time, the White House claims that Biden, in negotiations with Vladimir Putin, did not give him obligations that Ukraine would remain outside NATO. Russian President Vladimir Putin and US President Joe Biden held talks on November 7 via videoconference."**

**(In original Russian: "Эксперты рассказали о причинах переговоров Владимира Путина и Джо Байдена. Санкции России не грозят, а США заинтересованы в диалоге, считает главный научный сотрудник института США и Канады РАН Владимир Васильев. "Американская сторона в этих переговорах заинтересована. На сегодняшний день все эти разговоры о санкционном списке, о еще каком-то использовании санкционного оружия как "Северный поток - 2" или "Список 35", еще какие-то меры, это я называю "формулой развода". ... По сообщению пресс-службы Кремля, Владимир Путин в ходе переговоров заявил Байдену, что Россия заинтересована в получении юридически зафиксированных гарантий, исключающих расширение НАТО на восток и размещение в соседних с Россией странах ударных наступательных систем. При этом в Белом доме утверждают, что Байден на переговорах с Владимиром Путиным не давал ему обязательств, что Украина останется вне НАТО. Президент России Владимир Путин и президент США Джо Байден провели переговоры 7 ноября в режиме видеоконференции.")**

If this is accurate, you wish Biden - *already under probation from Joe Public for his disastrous withdrawal from Afghanistan last year, allowing that country to become another dictatorship, just the direction Ukraine will go under his brand of useless grandiose sounding "diplomacy" - akin to Chamberlain shaking hands with Hitler and signing worthless bits of paper, but refusing to deter war credibly and effectively for fear of media condemnation by ignorant journalists* - had been a bit more "diplomatic" and promised Putin that Ukraine would remain outside NATO, or even outside of the universe: by the time it would enter NATO, Biden would be out of office anyway so what was the big deal? (Appeasement is ineffectual sanctions; appeasement is not about successfully averting war by making agreements that can later be terminated if necessary!) Biden thankfully can only serve two terms maximum, even if Trump doesn't get back in next time, and American Presidents hardly bother to honour the promises made by their predecessors, even if they are members of the same party. E.g., Truman reneged on Roosevelt's wartime promise to Britain to continue postwar nuclear weapons collaboration. Britain then had to independently develop its own fission and thermonuclear fusion weapons until collaboration resumed in 1958! If America can do that, it could have given some worthless paper promises to Putin, to keep him out of Ukraine. The Chamberlain appeasement situation was the exact opposite of this: Sudetenland was given to Hitler in exchange for a worthless paper promise from Hitler!

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**\*(Footnote): UK Prime Ministers Baldwin and Chamberlain used a whole array of excuses to keep the UK from deterring WWII, all of which are still used today against nuclear weapons (Kahn pointed this out sixty years ago). For example, Chamberlain**

proclaimed himself (both publically from the window of his flat above 10 Downing Street in September 1938, and in private papers and letters proving he really believed he had achieved peace that way) a hero of peacemaking for allowing the invasion of Sudetenland by Hitler in exchange for a worthless signature from Hitler, promising no more invasions after that one! Then, when proved wrong by events in 1939, Chamberlain lied that he always knew Hitler was lying, but he was a secret hero for cleverly making bogus peace deals in order to "buy time for rearmament", a claim disproved by the fact that *Britain was rearming at a slower rate than Germany, thereby making a military success less likely with every day "bought", and he knew it was*. Chamberlain was as much a lying fraud as Hitler in terms of peacemaking. His lies are still promoted as "news" by bogus "historians" of the AJP Taylor CND peace propaganda lies variety, because many prefer fairy tales.

**UPDATE, 27 February 2022: *Putin puts Russia's nuclear forces on alert, cites sanctions* - By Yuras Karmanau, Jim Heintz and Vladimir Isachenkov, Associated Press in Washington post, 27 feb. 2022 - KYIV, Ukraine — "In a dramatic escalation of East-West tensions over Russia's invasion of Ukraine, President Vladimir Putin ordered Russian nuclear forces put on high alert Sunday in response to what he called "aggressive statements" by leading NATO powers. The order means Putin has ordered Russia's nuclear weapons prepared for increased readiness to launch, raising the threat that the tensions could boil over into nuclear warfare. In giving it, the Russian leader also cited hard-hitting financial sanctions imposed by the West against Russia, including Putin himself."**

This report, by Associated Press in the Washington Post, confirms sadly that so far Putin has responded to sanctions by following the predictions made above, escalating his nuclear weapons readiness for war to counter the sanctions with a nuclear threat, akin to what happened when Japan responded to hard-hitting American oil sanctions against it for its 1930s invasions prior to its attack on an American Pacific military base located at Pearl Harbor. This is the whole problem with the arms control situation. Supplying arms to the Ukraine Government to defend itself against Russia could easily be construed to Putin, if he so chooses, as essentially an act of war against Russia, deserving retaliation. Everything the "liberal elite", the left wingers headed by President Biden, does is always at best autistic lunacy that escalates the danger we face. While the BBC may claim that "Putin is isolated"\*\*, he has a larger nuclear force than us, and also powerful nuclear allies in China. It is simply untrue that sanctions will solve the problem; they escalate a crisis into a bigger war. Carpet bombing of civilians, used by Democratic President Johnson in Vietnam, was the same kind of autism; instead of kicking enemies into surrender, such actions as sanctions and attacking civilians just hardens enemy aggression more.

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\*\*(Footnote): The 1930s media also claimed incorrectly that Hitler was isolated (he had allies in Italy, Japan, etc.), but such lies in the "free" press helped to back up liars in the UK Government like Baldwin and Chamberlain and their populist lunatic policies for "peace in our time" which also lacked any credible deterrent, and just escalated the threats, encouraging genocide, not peace. Sir Norman Angell's *Great Illusion* argument that economic interdependence of nations prevents escalation in war is precisely reversed by the use of heavy economic sanctions against Russia, which cuts off the supposedly peace-keeping economic interdependence of nations and pushes it into the position of Japan in December 1941 and of Germany in September 1939 (thanks to Roosevelt's 1937 "quarantine the aggressor" theory). Irrational acts, not surrender, is what human nature usually produces when cornered and isolated, despite groupthink brainwashing arguments to the contrary, which were used to determine policy in the Vietnam War and recently in Afghanistan. You need

to accept enemy mentality as it exists, and not "put yourselves in the enemy's shoes", if your way of thinking lacks the paranoia, cultural mentality, and aggressive nationalism of an enemy. Russia is not completely isolated anyway, due to its allies in China, North Korea, et al. The latest ideas on fighting the war in Ukraine being mooted by the BBC psychotics/pundits centre around allowing Ukrainian pilots flying missions to bomb Russian forces in EU funded aircraft from airbases in NATO country Poland, while claiming that NATO is not involved. Again, the pressures of this kind provide excuses for Putin, if he wishes, to escalate it to WWII at a time and in a way of his choosing, with the factor of surprise in his hands. Threatening to bomb the Kremlin suffers from the risk that Putin could move to a bunker elsewhere, even if the bunker under the Kremlin is really at risk bearing in mind the Russian ABM system around Moscow that can knock down incoming warheads (lacking from Western cities) and the **nuclear crater sizes exaggeration scandal, which reduces the ground shock and cratering destruction to underground targets due to the ignorance in the 1977 Glasstone and Dolan *Effects of nuclear weapons* book about the work done against gravity in excavating large craters.**

ABOVE: 1986 Russian civil defense manual showing the shelters and evacuation plans which are in many ways similar to British efforts in 1939 prior to the British declaration of war on Germany two days after it invaded Poland. Note that various authors of American *Scientific American* articles argue that the **evacuation plans exist "largely on paper"** as if that somehow allows them to be ignored - just as the 1939 British "Operation Pied Piper" plans to evacuate kids from target areas for civil defence prior to the declaration of WWII against the Nazis - existed on paper until needed. But that didn't prevent kids and other vulnerable people, such as the pregnant, from being evacuated from London on 1 September and war declared two days later on 3 September 1939. The point we are making is that, as Herman Kahn argued, Hitler declared peace on Britain not war, and it was Britain that had to declare war first, and it *first* evacuated the likely bombing target of the most vulnerable using the "paper" evacuation plans to allow it to declare war on the Nazis, something that would have been *or at least seemed* more dangerous without such an evacuation first. The history of Russian civil defense is interesting, since to the Russians (unlike everyone else on the planet), both World Wars led to victories of sorts: WWI caused the revolution of October 1917 which replaced the Tsar with Lenin, while WWII led to the great expansion of the Russian Empire to include half of Europe, allowing resources to be seized which enabled rapid progress, from MIG jets to fission bombs in 1949 and thermonuclear two stage weapons in 1955, then the first satellite in space in 1957 and the first human in space in 1961. It is simply untrue that all Russians view WWII as being the disaster that it is portrayed for Britain. (*Russia actually achieved a victory that included territorial expansion and corresponding financial gains, unlike certain other countries that lost Empires due to WWII.*) According to Professor William R. Kinter and Harriet Fast Scott's 1968 book *The Nuclear Revolution in Soviet Military Affairs* (University of Oklahoma Press, pages 184-191), the Russian **Marshall V. I. Chuikov**, who was made chief of civil defense for the USSR after stopping the Nazis at



Stalingrad in WWII, and later advising Chiang Kai-shek and also founding the Whampoa Military Academy, in 1966 wrote an article in the Russian journal *Military Knowledge*, stating that civil defense allows a Russian victory in WWII:

*"The outcome of nuclear rocket war will now be decided not only on the battlefield, it will in significant measure be predetermined by strikes on the rear areas and on important political and economic centres. **Victory** in such a war will depend to a large degree on the ability of the state to **survive**."*

- Quotation from William R. Kinter and Harriet Fast Scott's 1968 book *The Nuclear Revolution in Soviet Military Affairs*, University of Oklahoma Press, pages 184-5. (**Emphasis** added to words which are totally taboo here in the West in connection with all things "nuclear". Note that co-author Harriet Fast Scott, a research agent/spy fluent in Russian, lived in the USSR for years in the 1960s since her husband was assigned there as U.S. air attache.)

Kinter and Fast Scott point out on page 185 of *The Nuclear Revolution in Soviet Military Affairs*:

*"Military Knowledge*, the magazine in which the [Chuikov] article appeared, is the official monthly journal of civil defense. There is nothing comparable with this publication in the United States ... The expensive, elaborate family shelters - advertised in the United States some years ago - are unknown. **A practical, inexpensive approach for protection measures, using materials readily available, is stressed.** It is hardly appreciated in the United States that the Soviet Union already possesses the world's finest shelters ... These are the deep, elaborate subways in five of the largest cities - Moscow, Leningrad, Kiev, Tbilisi, and Baku. Many sections of the subways run well over 100 feet below street level and are provided with heavy blast doors ... A large number of the total inhabitants of Moscow and Leningrad could be provided shelter in their subways alone." (**Britain installed some similar deep shelters in various London tube stations.**)

Regarding the Chuikov doctrine on the ability to achieve a "victory" in nuclear war by being better prepared for any eventuality than the opponent, the side which is better able to survive a nuclear war (by civil defense) can be considered the winner: this Marxist concept of war also prevailed successfully in Vietnam, where the Vietcong dug deep tunnel shelters and left civilian kids to be napalmed in the open for left-wing Western propaganda. It worked, they won in Vietnam using that strategy. This is the very opposite of the "knockout blow" mythology that prevailed in Germany in 1914 and 1939, and also in the West during the Vietnam War, but not the 1st Cold War as a whole, where the West achieved victory and the USSR defeat, through the West's surviving longer than the increasingly bankrupt USSR. Herman Kahn pointed out in the 26 June 1959 U.S. Congressional Hearings on the *Biological and environmental effects of nuclear war*, that Germany did not start WWI or WWII by a direct attack on Britain, and that Germany planned for a short "knockout blow" military conquest; in both cases it was Britain that declared war on Germany first, not vice-versa. In other words, "Type I Deterrence (deterrence of a direct attack on Britain)" did *not* fail in either 1914 or 1939. Only "Type II Deterrence (deterrence of an act of provocation, e.g. the invasion of a third party)" failed. So a country starting WWII, on the basis of WWI and WWII experience, does not need to directly bomb London or New York. Put another way, strategic nuclear weapons, if they had existed in 1914, would have no more deterred the invasion of Belgium then, than they deter the invasion of Ukraine today. For victory you need to be capable of fighting and surviving sufficiently either a surprise attack or long war of attrition, regardless of whether that is an economic cold war via an arms race, or a hot war involving any kind of weapon.

The strategic nuclear deterrent's role is purely Kahn's debunked Type I deterrence - a fallacy due to the Western obsession with "knockout blow" mythology - which also prevailed in the West in the 1930s where the media was filled with hype claiming that single gas or incendiary aerial attacks on cities would induce defeatism and immediate surrender. This was a travesty of logic which ignores precisely those situations - indirect attacks - that triggered both World Wars. Deterring indirect attacks like sinking the Lusitania in 1915, invading Belgium in 1914, bombing a Pacific island naval base at Pearl Harbor in 1941, or invading Poland in 1939, requires not Type I but the more difficult Type II deterrence, tactical nuclear weapons, since conventional weapons failed to deter both world wars and strategic nuclear weapons have not proved to be a credible deterrent against invasions of third parties. This is because the mobilization of conventional conscripted large armies or tank columns to borders for deterrence of large scale invasions is seen as an act of aggression, whereas nuclear weapons of significant deterrent power are small enough to be continuously available aboard submarines and in missile silos and iglo bunkers on airfields, ready at all times without the trigger-happy 1914-crisis-escalating massive mobilizations that set off World War I. As General Boisdeffre stated lucidly to Tzar Nicholas in 1892, the mobilization of conventional weapons to try to deter world war has the opposite effect because the highly-visible mobilization of the relatively bulky conventional weapons and massive armies is naturally a massive escalation rather than a deterrent, causing immense crisis instability:

"THE MOBILIZATION IS THE DECLARATION OF WAR. TO MOBILIZE IS TO OBLIGE ONE'S NEIGHBOUR TO DO THE SAME ... OTHERWISE, TO LEAVE A MILLION MEN ON ONE'S FRONTIER, WITHOUT DOING THE SAME SIMULTANEOUSLY, IS TO DEPRIVE ONESELF OF ALL POSSIBILITY OF MOVING LATER; IT IS PLACING ONESELF IN A SITUATION OF AN INDIVIDUAL WHO, WITH A PISTOL IN HIS POCKET, SHOULD LET HIS NEIGHBOR PUT A WEAPON TO HIS FOREHEAD, WITHOUT DRAWING HIS OWN ..."

The mad emergence of nuclear parity, in the late 1960s and early 1970s, occurred after Robert S. McNamara used now-discredited computerised nuclear war effects models (with no more sensible equations than those he used to lose the Vietnam war, i.e. ignoring Russian civil defense just as the improvised conventional war underground shelters of the Vietcong were ignored) to determine nuclear deterrence stockpile levels. The Russians then produced more weapons than America into the 1970s, and America responded with the neutron bomb and arms control treaties for strategic weapons. **This was a reversal of the American nuclear superiority behind the amicable resolution of the Cuban missiles crisis by Kennedy in 1962, a factor pointed out by General LeMay in his 1968 book *America is in Danger*. (Where the left-wing disarmament-biased "historians" analyze the lessons of the Cuban missiles crisis, they deliberately ignore the massive U.S. nuclear superiority which existed in 1962, and its positive effects on Russian decision making, just as they ignore Feis' argument in *Japan Subdued*, that the emotional aspects of nuclear weapons effects in August 1945 tipped the balance against accepting a dishonorable surrender; in other words, although Japan knew it was defeated and the nuclear attacks were in that sense totally unjustified, emotionally they needed an "excuse" to hoist the white flag after so much suffering, and this saved 200,000 Yanks earmarked for an invasion of the Japanese home islands as well as 1,500,000 Japanese lives.)**

There is a compendium of classic 1960s and 1970s arguments for civil defense, and their political suppression by left-wingers and fools, in Nobel Laureate Dr Eugene P. Wigner's *Collected Works, part B, volume VIII*, edited by Jagdish Mehra (Springer, 1998, 258 pages). **Wigner on 28 April 1976 testified before the U.S. Congressional Hearings of the Joint Committee on Defense Production (page 144 in their printed hearings, online version is [LINKED HERE](#)) that the new Russian evacuation plans - as shown in its 1969 Civil**



**Defense Manual (translated as ORNL-TR-2306, Oak Ridge National Lab.) - are very effective (the Russian civil defense plan includes only essential workers commuting into cities for 12-hour shifts, and using shelters):**

**"Indeed an easy calculation shows that, if the USSR carries out its city evacuation plans, the total number of casualties that all the nuclear weapons in our missiles could cause would be a good deal less than 50% the losses they suffered in World War II. A reasonable estimate, based on the Oak Ridge [National Laboratory] test of a blast resistant 'expedient shelter', described in the USSR civil defense handbooks, gives for the loss which our missile carried nuclear weapons could cause, about 3% of the USSR population. What about our own situation? ... An evacuation plan [costs] \$1.2 billion .... a blast resistant shelter system similar to that of China ... would cost around \$35 billion."**

In 1979, in a joint article with hydrogen bomb advocate Dr Edward Teller in the U.S. Senate Congressional Record (2 August 1979, page S-11490), Wigner points out that Kahn's Type I deterrence is inadequate to prevent war (Type I is also called "mutual assured destruction", if both sides have parity via "arms control" delusions): "... I believe that the so called Mutual Assured Destruction is nonsense, because suppose even if the attacked nation could retaliate, if the other nation pretends that it does not believe it and makes a demand, is there any point in resisting? What good does it do if it can destroy hundreds of thousands of the aggressors' lives ..."

In his 26 May 1964 address to Mercer County NJ Civil Defense organization (reprinted in his Collected Works, part B, Vol. 8, p35 et seq.), Wigner explains that "people who are against Civil Defense often have some element of frustration ... and they find more easily time for, and outlet in, their opposition," as explained by Robert Waelder's article *Protest and Revolution Against Western Societies*, in M.A. Kaplan (ed), *The Revolution in World Politics* (New York, 1962, p 18), i.e. it is the same as the mechanism for Marxist agitators, some of which are openly Marxist and others pretend to be libertarian while remaining faithful to the bigoted dictators. Wigner's address continues: "Much more literature - I think 80% - is against than for Civil Defense and much of it is completely irresponsible. A few weeks ago I read an article in the Bulletin of the Atomic Scientists in which the author said that a complete *fallout* [cheaper than blast] shelter program would cost \$50 billion. Now \$50 billion is more than would be spent on the *complete blast* [and fallout] shelter program which I mentioned [\$35 billion]. But ... who will contradict it?"

In **Publication 82 of the American Association for the Advancement of Science, *Civil Defense*, 1966, edited by H. Eyring**, Wigner remarks on page 121: "Dr Rapoport said, in a note to the Bulletin of the Atomic Scientists, that it is possible that surrender to Hitler would have led to fewer deaths ... My view is the opposite in this case: I believe that if the West had shown clear resolve and determination from the start, WWII could have been averted."

After **Leon Goure wrote his May 1972 report, "Soviet Civil Defense - urban Evacuation and Dispersal" (Centre for Advanced International Studies, Miami University, DTIC report AD0745136)**, Wigner and J. S. Gailar wrote in their joint article **"Russian Evacuation Plans - the Fears they Create" in the September-October 1974 issue of *Survive* (v7, n5, pp 4-5):** "If the leadership of the USSR should change and become more aggressive, it would have, under the present circumstances, a terribly tempting option: to stage an evacuation and to provoke a confrontation when this is completed." Wigner later testified to the **U.S. Congressional Hearings of the Joint Committee on Defense Production, *Civil Preparedness and Limited Nuclear War* (28 April 1976, pp 143-7)** that the principal danger: "is the possibility of the USSR evacuating its cities, dispersing their population, and the making demands on us, under the threat of a nuclear attack, approximating those made by Hitler on Czechoslovakia which led to the Munich Pact."

The only reply Wigner received was a nonsense filled 11-page article attacking all these lessons from Russian Civil Defense, headed "Limited Nuclear War" by Sidney D. Drell and Frank von Hippel, and published in the November 1976 issue of Scientific American, the editor of which, Dennis Flanagan, refused to publish Wigner's rebuttal, entitled "We heartily disagree", just as Kahn's rebuttal to the nonsense review of his book on Civil Defense in 1961 had been refused by Scientific American, leading Kahn to expand it into his 1962 book "Thinking about the unthinkable". Wigner's and A. A. Broyles rebuttal to Scientific American was finally published instead as "We heartily disagree" in the Journal of Civil Defense, v10, pp. 4-8, July-August 1977 issue, pointing out that the Russian casualties with civil defense would be 4% on Wigner's unclassified estimate or 2% using T. K. Jones's classified data estimate (utilizing secret data on the survival of foxholes in nuclear tests, in the 1972 DNA-EM-1 Capabilities of Nuclear Weapons), and that the Russian improvised lined, covered trench shelters survive a peak overpressure of 40 psi as well as heat flash and fallout radiation, and adds that contrary to the nonsense in Scientific American, *the Russians did test their plans by evacuating the city of Sevastopol in a drill which led to improvements in their plans.*

H-bomb proponent Edward Teller, Eugene Wigner, and A. A. Broyles in May 1973 had jointly authored the American Security Council report, "Without civil defense we are in a glass house", which basically argues that you can't have a deterrent for world war if you are not prepared to use that deterrent when your bluff is called. *If you are in Chamberlain's position in 1938 or Baldwin's in 1935, you are scared of using the deterrent because it is like "throwing stones in glass houses", because - if you can't shelter people because you refuse to have shelters and you also won't have a plan to evacuate kids from London (Operation Pied Piper, 1939) before you declare war - then you can easily be scared and coerced by Hitler or other dictators, who can see clearly that your "deterrent" is a complete bluff and totally, pathetically useless, because a weapon you can't use is not a credible deterrent. Naturally, as we keep repeating on this blog, this is what the defeatists who love Putin and other dictators want since surrender has two vital steps: (1) get rid of the shield (civil defense) since that makes the sword credible as an alternative to disarmament, and (2) point out that a sword without a shield is an incredible deterrent that is useless, so we had better disarm (and surrender)! Arms control delusions like supposed "parity" (a balance of weapons on both sides, as if democracies need deterring like dictatorships), when one side has credible civil defense and the other doesn't, is like a duel between two people, similarly armed, but with one wearing body armour and the other totally unprotected! Not on that, but the dictator is the one wearing the body armour!*



DEBORAH SHAPLEY, *SCIENCE*, v 194, 10 Dec 1976,  
issue 4270, pp. 1141-1145:

## Soviet Civil Defense: Insiders Argue Whether Strategic Balance is Shaken

An emotionally charged debate, which is now erupting into the public arena, has been raging within the American intelligence community about the Soviet Union's ability to protect its leadership, industry, and population in the event of an all-out nuclear war with the United States.

Some high officials believe that the Soviet Union is becoming so well fortified through its civil defense program that it could survive and recover from a nuclear war. Therefore, they assert, the strategic balance between the two countries, which has governed foreign policy and arms control for over a decade, has been upset.

But this conclusion is hotly contested in some quarters, and one official simply calls it "a joke."

No matter who is right, the controversy seems to be rekindling discussion of whether the United States should step up its civil defense effort.

The evidence that a massive, accelerated civil defense effort is under way in the Soviet Union is hotly disputed, but government officials who believe this is taking place cite the following to support their case:

► A gigantic, 7- to 8-million-square-foot factory hidden under a mountain, "west of the Urals and east of Moscow" of which the stacks, blast doors, and service roads are the only visible elements. Others have also been found.

► Population shelters near apartment complexes in Moscow, Leningrad, and Kiev. These look like dirt mounds, but they have ventilation panels on top and stairwells on the side.

► About 40 underground grain silos whose reserves are replenished periodically to prevent spoilage.

► Approximately 30,000 blast-proof and fallout-proof shelters to protect military equipment, troops, and communica-

tion. Altunin is said to have 78 generals under him whom American sources can identify by name.

► New industrial plants in dispersed locations away from urban centers. The patterns of development follow those outlined in Soviet civil defense manuals. Several underground facilities have also been found, apparently designed to shelter the work force, goods, or machinery.

Within the intelligence community, the Central Intelligence Agency (CIA) is said to be most skeptical of claims that the above findings, and other evidence, add up to a civil defense effort that military strategists and foreign policy-makers need worry about. Opposing this view is the Air Force Intelligence Service, which found some of the new evidence and which adheres to the view that the program is large enough to threaten national security. The Defense Intelligence Agency (DIA), which oversees the intelligence bureaus of the armed services and which is officially responsible for information on Soviet strategic targets, has taken a middle position.

The discussion has spread to Congress, where members and key staffers have received sometimes conflicting briefings, and where emotions are run-

ning high, both among those who think the whole argument is ridiculous and those who believe the United States is already Number Two. Calls for a U.S. civil defense effort, and for new strategic weapons have been issued; and the controversy shows every sign of gathering momentum in the coming year. While his boss was being briefed, for example, an aide to one conservative Republican said, with a gleam in his eye, "It was when I realized the Russians were Number One, that I really began to worry."

Several congressmen have been briefed by Thomas K. Jones, a Boeing Aerospace Company employee and former member of the Strategic Arms Limitations Talks (SALT) staff. Jones, with his mod style of dress, plain-spoken manner, and fervent, almost religious belief in the issue, has become a star witness at a number of hearings. He also acknowledges that he is privy to intelligence information on the status of Soviet civil defense. Jones claims that after a nuclear war, 98 percent of the Soviet population would survive and Soviet industry would recover in 2 to 4 years, as compared with industry in the United States, which would take 12 years to recover.

Prominent nongovernment experts have become embroiled in the controversy. Former Navy Secretary Paul H. Nitze, one of the elder deans of the defense community, recently added legitimacy to Jones's claims when, in an article in the January issue of *Foreign Affairs* magazine, he included Jones's calculations of the relative weakness of U.S.

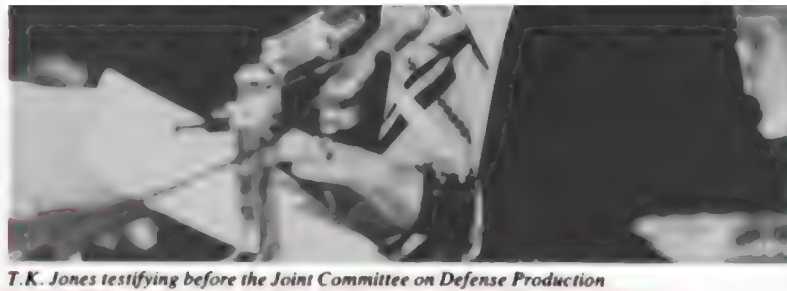




tions. These include approximately 75 hardened underground facilities in the vicinity of Moscow. Bunkers for the Politburo and other elements of the leadership are said to be enclosed in "giant steel spheres."

► An extensive military-run civil defense organization led by General-Colonel A. T. Altunin, an aggressive, relatively young officer, whose rank is equal to that of the heads of the armed forces.

10 DECEMBER 1976



T.K. Jones testifying before the Joint Committee on Defense Production

**NOTE: President Reagan recruited T. K. Jones in 1980s.**

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ABOVE: long-haired scientist **Thomas K. Jones**, better known as T. K. Jones, (pictured testifying before the Joint Committee on Defense Production, in *Science* magazine, 10 December 1976 after his Congressional Testimony raised the wrath of crackpot Scientific American and Bulletin of Atomic Scientist fans) was the "fall guy" of Reagan's civil defense, doing the explosive tests for Boeing Corporation on Russian civil defense shelter designs and testifying on their consequences for strategic nuclear deterrence - basically debunking strategic nuclear deterrence and McNamara's/Glasstone's totally fake news on urban nuclear weapons effects entirely, since 98% of Russians would survive the US nuclear stockpile when dispersed in shelters - which inspired Cresson Kearny's Oak Ridge National Laboratory manual, Nuclear War Survival Skills. President Ronald Reagan, prior to his election as US President, was leaked **secret CIA reports on Russian civil defense tests** of shelters and **evidence of their tests of city evacuation plans** for instance by evacuating **Sevastopol** in Crimea and also, in 1975, **Lytkarino** (a suburb of Moscow containing 40,000 people). **A clue to who helped him was shown by Reagan's decision to controversially appoint T. K. Jones as Under-Secretary for Defense for Research and Engineering!** A book was then published called *With Enough Shovels: Reagan, Bush and Nuclear War*, ignoring the key scientific evidence entirely, and merely trying to ridicule Reagan's appointment of T. K. Jones (who is quoted on the front cover), as a **left wing Democratic supporting political instrument - like Duncan Campbell's similarly vacuous War Plan UK**. This was left-politics versus hard science. It often appears to work because Mr Joe Public loves a tall-story fairy tale!

If proof of this is needed, Robert Scheer, a fellow in arms control at Stanford University and the author of *With Enough Shovels: Reagan, Bush and Nuclear War*, became "Truthdig" editor-in-chief, **a propagandist who claims that ending WWII with nuclear weapons made Truman guilty of "the most atrocious act of terrorism in world history"**, so he needs to check his facts on the numbers **gassed in the Holocaust, or starved in Ukraine by Stalin, unless he denies those deliberate acts of terrorism like the other left wing Holocaust deniers who confuse racism and anti-racism, terrorism and anti-terrorism**. When you actually check the facts: (1) Secretary Stimson (U.S. Secretary of War) knew he has a secret nuclear weapons program of investment of billions of dollars to justify to Congress after WWII ended and didn't want to hold back using the bomb for that reason, so he promoted Hiroshima as being a military target (it did have military bases, particularly at Hiroshima Castle just north of ground Zero, but it was also a highly populated civilian city), (2) **Hiroshima's air raid shelters were unoccupied because Japanese Army officers were having breakfast when B29s were detected far away, says Yoshie Oka, the operator of the Hiroshima air raid sirens on 6 August 1945**, (3) Colonel Tibbets, former bomber of Germany before becoming the Hiroshima pilot as commander of the 509th Composite Group, explains how his pilots and crew were ridiculed heavily for lack of accomplishments, while preparing for weeks on Tinian Island. According to Tibbet's own book *The Tibbets Story* a poem was published before Hiroshima called "Nobody knows" lampooning the 509th's results: "Nobody knows. Into the air the secret rose; Where they're going, nobody knows; Tomorrow they'll return again; But we'll never know where they've been. Don't



ask us about results or such; Unless you want to get in Dutch. But take it from one who is sure of the score, the 509th is winning the war. When the other Groups are ready to go; We have a program of the whole damned show; And when Halsey's 5th shells Nippon's shore; Why, shucks, we hear about it the day before. And MacArthur and Doolittle give out in advance; But with this new bunch we haven't a chance; We should have been home a month or more; For the 509th is winning the war." Tibbets was therefore determined create maximum effects after his group had been ridiculed at Tinian Island for not attacking Japan during weeks of preparations on the island, rehearsing the secret nuclear attacks while other B29s were taking took flak trying to bomb Japan into surrender with conventional bombs. He writes in *The Tibbets Story* that regular morning flights of small groups of weather and phototographic survey planes that did not make

significant attacks over possible nuclear target cities, helped to reduce civil defense readiness in the cities, as well as reducing the air defense risks, since Japan was rationing its use of its limited remaining air defense in 1945.

The November 1976 Scientific American anti-civil defense article claimed that civil defense was discredited since: "In the 1960s the US adopted a strategic policy giving top priority to the prevention of nuclear war through deterrence ...", to which Wigner and Broyles responded to this claim in "We heartily disagree" in the July-August 1977 *Journal of Civil Defense*: "How do you deter an attack unless you convince an enemy that you will fight the war that he is starting?"

Dictators often start wars which their people don't need: the Persian war against the Greeks, Hannibal's war against Rome, the Tartar's invasions of Europe, the Turks' invasion of Hungary, the invasions of Napoleon. You have to accept that aggression is not necessarily a completely rational activity! All that counts for deterrence is that it is credible. If you don't prepare to fight with strategic nuclear weapons, then they are just a pointless bluff, a paper tiger as the Chinese put it, not a credible deterrent. Which is precisely what the disarmers want, of course, since nuclear parity, with the shift away from credible nuclear deterrence to incredible foolery, is only one step away from admitting the uselessness of the strategic nuclear stockpile, disarming and surrendering!

UPDATE (10 March 2022): A [commenter on this blog post states](#):

**Western Trade Pressure on the Soviet Union, An Interdependence Perspective on Sanctions, Springer, 1991, by David W. Hunte, pp 14-15:**

#### **Economic Sanctions: Pre-World War II Through Cold War**

"In 1925, British Foreign Secretary Austen Chamberlain stated in the League of Nations: 'The great advantage of economic sanctions, is ... they do not involve the resort to force.' The commonly held view was that economic sanctions were the perfect weapon to pressure states into compliance without blood being spilt or lives lost. By 1980, however, Adler-Karlsson had reached a different conclusion: economic sanctions as instruments of foreign policy almost never worked. ... . In both Britain and France, the situation was one of choosing the least undesirable alternative."

**The reality is that "sanctions work" but not in the way intended. Sanctions against Japan resulted in the surprise attack on Pearl harbor, thus war, escalating into nuclear war against the Japanese cities of Hiroshima and Nagasaki in August 1945. Sanctions against Nazi Germany resulted in invasions to seize wealth, and war. Sanctions against Saddam's Iraq ended in a Gulf War. So much for sanctions being a proved alternative to deterrence.**

Just one final thought on Kennedy's experience: apart from putting civil defense "nuclear shelter" signs on public building basements and putting geiger counters, food, water and emergency toilets into them to enable America to take shelter if the chips go down, apart from sending his brother to Nevada test site to watch the test firing of the W54 Davy Crocket battlefield tactical nuclear deterrent weapon in 1962, apart from standing firm on the Cuban blockage in October 1962 (instead of appeasing Khrushchev, and note that the obsolete pile of junk he removed from Turkey, the highly vulnerable liquid-fuelled old Jupiter missiles, were obsolete anyway and due to be replaced by less vulnerable Polaris sub in the Med), and apart from approving the final series of high altitude nuclear tests, Operation Fishbowl,

which revealed the magnetic dipole EMP, Kennedy also rejected the economic trade sanctions against the USSR which could have forced another war like the sanctions of the 1930s:

**President John F. Kennedy, "U.S. Grain Dealers to be Allowed to Sell Wheat to Soviet Union and Eastern Europe." U.S. Department of State Bulletin, v49, 1963, p.660-661: "It demonstrates our willingness to relieve food shortages, to reduce tensions, and to improve relations with all countries and it shows that peaceful agreements with the United States which serve the interests of both sides are a far more worthwhile course than a course of isolation and hostility."**

ABOVE: **John F. Kennedy's *Why England Slept* manuscript dated 25 May 1940 (CREDIT: JFK LIBRARY); notice the statement above right that his conclusion is that the war was the inevitable result of the slowness of the conversion of the British disarmament policy into a policy of rearmament!** John F. Kennedy's college thesis on the need for deterrence and civil defence to make it credible in the face of enemy threats and aggression (a big stick in the hands of a goliath is useless if the enemy is a David with slingshot that can stun the goliath with a stone to the forehead, allowing victory, so you need some defensive armour to make the big stick a credible deterrent rather than mere bluff that can be easily neutralised by any smaller enemy due to your vulnerabilities), *Why England Slept*, is still worth more than all the sanctions and peaceniks literature ever written, explaining his **often forgotten speech on civil defence as a national necessity for credible deterrence of war, given as United States President to a Joint Session of Congress precisely 21 years later to the day from the completion of his book (speech on 25 May 1961, precisely 21 years to the day after the 25 May 1940 date on his manuscript above):**

**"No role in history could be more difficult or more important. We stand for freedom. ... I am here to promote the freedom doctrine. ... the adversaries of freedom ... send arms, agitators, aid, technicians and propaganda to every troubled area. But where fighting is required, it is usually done by others - by guerrillas striking at night, by assassins striking alone - assassins who have taken the lives of four thousand civil officers in the last twelve months in Vietnam alone - by subversives and saboteurs and insurrectionists, who in some cases control whole areas inside of independent nations. ... We stand, as we have always stood from**



our earliest beginnings, for the independence and equality of all nations. This nation was born of revolution and raised in freedom. And we do not intend to leave an open road for despotism. ... Military pacts cannot help nations whose social injustice and economic chaos invite insurgency and penetration and subversion. The most skillful counter-guerrilla efforts cannot succeed where the local population is too caught up in its own misery to be concerned about the advance of communism. ...

"One major element of the national security program which this nation has never squarely faced up to is civil defense. This problem arises not from present trends but from national inaction in which most of us have participated. In the past decade we have intermittently considered a variety of programs, but we have never adopted a consistent policy. Public considerations have been largely characterized by apathy, indifference and skepticism ... this deterrent concept assumes rational calculations by rational men. And the history of this planet, and particularly the history of the 20th century, is sufficient to remind us of the possibilities of an irrational attack, a miscalculation, an accidental war, which cannot be either foreseen or deterred. It is on this basis that civil defense can be readily justifiable - as insurance for the civilian population in case of an enemy miscalculation. It is insurance we trust will never be needed - but insurance which we could never forgive ourselves for foregoing in the event of catastrophe. Once the validity of this concept is recognized, there is no point in delaying the initiation of a nation-wide long-range program of identifying present fallout shelter capacity and providing shelter in new and existing structures. Such a program would protect millions of people against the hazards of radioactive fallout in the event of large-scale nuclear attack. Effective performance of the entire program not only requires new legislative authority and more funds, but also sound organizational arrangements. Therefore, under the authority vested in me by Reorganization Plan No. 1 of 1958, I am assigning responsibility for this program to the top civilian authority already responsible for continental defense, the Secretary of Defense ... no insurance is cost-free; and every American citizen and his community must decide for themselves whether this form of survival insurance justifies the expenditure of effort, time and money. For myself, I am convinced that it does."

ABOVE: Hitler propaganda and coercion so called peace offers in October 1939 and March 1940, because he knew that Britain's Secretary of State for Foreign Affairs, Lord Halifax, was keen on trying to negotiate a peace deal with the Nazis rather than face up to a repeat of WWI, particularly after Britain's defeat in France at Dunkirk in the face of the overpowering German Panzer attacks (radio propaganda, aided by plenty of whisky and cigars, from Churchill portrayed this retreat and evacuation from Europe as being a miracle, but although losses were minimised - thanks not to Churchill's planning but to emergency improvised evacuation across the channel using small private boats from England - Hitler won the actual battle and successfully drove the British Expeditionary Force from France). Russia in the 1st Cold War set up the World Peace Council in Moscow to fund and help Western nuclear disarmament movements to try to make its domination of the West possible by removing W79 neutron bombs etc, leaving us without a credible deterrent against Russian invasions. It simultaneously made peace propaganda offers to end war by collaboration with dictatorships, an offer that appealed to many idealists who believed it, as Lord Halifax believed Hitler's repeated peace lies. We can expect Putin to make peace promises as a propaganda tool. If he actually wanted peace he would not have invaded Ukraine.

March 14, 2022 5:04 PM GMT <https://www.reuters.com/world/un-chief-says-prospect-nuclear-conflict-back-within-realm-possibility-over-2022-03-14/>

U.N. chief: prospect of nuclear conflict back 'within realm of possibility' over Ukraine By Humeysa Pamuk

*March 14 (Reuters) - United Nations Secretary-General Antonio Guterres on Monday sounded the alarm over Russia raising the alert level [weeks ago] for its nuclear forces after invading Ukraine, describing it as a "bone-chilling development." "The prospect of nuclear conflict, once unthinkable, is now back within the realm of possibility," Guterres told reporters, and repeated his call for an immediate cessation of hostilities. Russia's invasion of Ukraine that began on Feb. 24 has so far sent more than 2.8 million people fleeing across Ukraine's borders and trapped hundreds of thousands in besieged cities while triggering broad Western sanctions on Russia. [Actually, the so-called UN, better called the non-united nations, contributed to the war by its repeated calls for nuclear disarmament, which has had precisely the effect John F. Kennedy found when he wrote *Why England Slept* from his experience in London with his dad, the American Ambassador to Britain, when deterrence failed due to Nazi propaganda on war devastation and poison gas on cities for disarmament, defeatism, and a Third Reich conquest using a minimal military force.)*

<https://www.ft.com/content/6cf7229b-1aa7-435e-84d9-e3c7a094350d#post-5a7c0648-f48b-4cfb-a163-95b922713201> **Financial Times, 16 March 2022. Zelensky pleads with Biden for no-fly zone or fighter jets. James Politi in Washington. Ukraine's president Volodymyr Zelensky pleaded for the US to enforce a no-fly zone or provide fighter jets or other means to fend off Russia's attack on his country, in a virtual address to members of Congress on Wednesday. Zelensky urged US lawmakers to impose harsher economic sanctions on Moscow ... He called on Americans to remember the attacks on Pearl Harbor and September 2001, saying "our country is experiencing the same thing every day right now", and showed a video of the missile attacks and shelling destroying Ukrainian cities. ... At the end of his address, Zelensky directly addressed US president Joe Biden in English, saying: "I wish you to be the leader of the world. Being the leader of the world means to be the leader of peace."** (Loon's "peace" is the nuclear deterrent-lacking world of 1914 or 1939.)

ABOVE: Hiroshima ground zero showing surviving concrete buildings amid the debris from now-obsolete wood frame (with tiled roof) buildings that burned in a firestorm that developed 30 minutes after the bombing, not instantly as claimed in approximately 100% of newspaper and TV fake news propaganda on nuclear weapons for disarmament - **a Los Alamos nuclear weapons jobsworth and coward called Dr Harold Agnew exposed only in SECRET classified documents the exaggerations of nuclear weapons effects on people on modern concrete city buildings in Hiroshima with a "Confetti argument" - see the originally SECRET Los Alamos report LA-14066-H, Tracing the Origins of the W76: 1966-Spring 1973 (U) by Betty L. Perkins**, thereby preventing widespread public understanding of the truth, and so enabling anti-nuclear media dominating anti-civil defence pro-disarmament pro-dictatorship liars to deceive the world about nuclear weapons capabilities just as the 30s poison gas media dominating anti-civil defence pro-disarmament pro-dictatorship liars to deceive the world about the Nazi threat to gas bomb all modern cities, etc. This anti-nuclear disarmament propaganda effort is still covering-up the hard scientific facts on nuclear radiation effects for everything from medicine to nuclear power, such as the **extensive evidence (see the graph below from the still-maintained website of U.S. Government's radium dial painter dos-effects project investigator, the late Dr Robert E. Rowland, 1923-2017) that there is a dose-rate threshold for cancer of approximately 100 micro-Sieverts per hour or 10 mR/hour in old units (from an intake of 100 microcuries of radium-226 alpha emitter or its equivalent)**, summarised as follows by study leader Dr Robert Rowland in his published 1995 Oral History interview:

**"Two of the things that most people haven't realized on the induction of malignancies by radium deposited in a human [are], one, how few there are and, two, the fact that, whether we like it or not, they are the best definition of a threshold relationship that I've**

ever come across. ... an initial systemic intake of less than about 75 microcuries of radium that's systemic intake, which is one-fifth of the total intake has never induced a malignancy, either bone sarcoma or carcinoma of the air cells. ... [Radium-226 radiation dose threshold for effects is] 75 microcuries, systemically, which is five times that in terms of oral ingestion, or 75 if you inject it with a needle in the vein. ... if you quote rem, 20,000 [assuming relative biological effectiveness, RBE = 20 for alpha particles, i.e. alpha dose in rem or cSv = 20 x alpha dose in rads or cGy]. ... I mean, I [grew] up with the idea that 600 rad, to the whole body, was lethal. And then I go talking about, "But we've never seen a malignancy under 20,000 rem, or 1,000 rads, of radiation." You know, you don't even get a malignancy, yet you kill someone with 600 rads! ... This population of people we've measured, if we line them up in order of initial systemic intake, how much radium got into the bloodstream, and put them in pecking order — of the 2,400, all of the malignancies occur in the highest 280 cases. The lower 2,100 cases, nothing. All of it occurs right there. ... which is another way of saying, "It sure looks like a threshold relationship." ... As you well know, several years ago, it was proposed that the radium levels in drinking water be changed significantly upward. ... It's one of these mandates of our Congress that have insisted that a certain level was God-given, and we had better not have more than that in our water. ... And, incidentally, you may not be aware, radium in water is causing a big problem, not in drinking, [but] in the oil industry ... When you pump oil, water comes up. That comes from way down, and it's loaded with radium. ... If you own an oil well that has four miles of pipe going down, each one 30 feet long and 3 inches in diameter, when they scale up [with calcium carbonate deposits] you don't throw them [away], you pull them and clean them out. This went on for years, until somebody discovered they contained radium in the scale."

ABOVE: Blast duration effects on cube root scaling are only important at low yields, not high yields, as observed for house damage in Britain, based on actual observations, not faked "theoretical analyses" used for propaganda for anti-nuclear disarmament scare mongering, which is designed to try to discredit civil defense using lies in order for disarmament and surrender to be the "only option" for survival.

The blood of the Ukrainian kids must be partly on the hands of those who permitted the circulation of nuclear deterrent lies to remove Ukraine's nuclear deterrent against Russian aggression. **What a terrible people keep the truth secret, thereby allowing public deceptions by political left-wing thugs for nuclear disarmament to enable dictatorships to launch lethal invasions with effective impunity. Other warhead histories by Betty Perkins include LA-13755-H: *Tracing the Origins of the Modern Primary: 1952-1970 (U)*, LA-12950-H: *Why Nougat? (U) Understanding the Events Leading to the Los Alamos Scientific Laboratory's First Full-Scale Underground Test Series and Related Considerations (U)*, and LA-12393-H: *The 1959-1961 TA-49 Experiments and Related Considerations (U)*.. Don't expect to ever see anything like this published on the front page of any Western so-called newspaper or as the lead item in any Western TV "news" show. They carefully screen out anything that upsets the nuclear warmongers who don't care about provoking another war through disarmament lies, as they did in the 20s and 30s, because the Western public want to be protected from reality until it breaks through their comfort zone and kicks their ass, as happened to Ukraine after it surrendered its nuclear deterrent for loads of lies on a piece of paper which has now proved no more valuable than worthless paper peace promise which Hitler signed on 30 September '38.**

ABOVE: in 1979, the basic data on yield, weight and configuration of various nuclear devices including data on the primary stages Swan (Redwing-Inca, 15.2 kt W45, 11.6 by 22.8 inches, 105 lb; also tested as the primary stage inside the successful 360 kt Redwing-Mohawk thermonuclear test) and Swallow (Redwing-Kickapoo, 1.49 kt, 8 by 28 inches, 225 lb), and megaton range thermonuclear device Bassoon (Mk41 Redwing-Tewa, 5.01 Mt, 87% fission, 39 by 135.5 inches, 15,735 lb; and in its cleaner form Redwing-Zuni, 3.53 Mt, 15% fission, 39 by 135.5 inches, only weighing 12,158 lb due to replacement of U238 with lead, which - contrary to populist myths - is *not* entirely useless or inert since lead does undergo a beryllium-like (n,2n) reaction for T+D fusion neutrons with energy exceeding 10 MeV, with the (n,2n) lead neutron cross-section reaching 2 barns for 14.1 MeV neutrons), and the use of plastic foams to reflect and channel X-rays for the ablative compression of thermonuclear fusion stages, with tested design results (rated in megatons per metre length of fusion cylindrical stage), was disclosed in report UCRL-4725, *Weapon Development During June, 1956*. This was after having been mistakenly declassified 4 years earlier, on 30 July 1975. Only 56 copies of this secret report were printed, and the whole report was declassified accidentally when only pages 23-29 should have been released. Bassoon worked like the Mike and Castle devices, which were basically Teller 1946 Classic superbomb cylinders of thermonuclear fuel ignited at one end, but sideways compressed by x-ray ablative compression on the cylindrical surface rather than end-on heating through a beryllium shield as Teller has envisioned in 1946, utilizing a relatively low yield fission primary stage to initiate the thermonuclear burn. Howard Agnew told Richard Rhodes (Dark Sun, 1995) that in the 1952 Mike device, a layer of plastic foam was attached to the lead lining on the inside of the casing of weapons to act as "x-ray mirrors", preventing the ablative blow-off of metal into the radiation channel by x-rays. However, **the British**



**designer - Brian Taylor - of the first successful 1.8 megaton spherical secondary stage test in 1957 on TV recently reported that their devices used plastic foams filling the entire x-ray radiation channel, in order to allow isotropic (uniform from all directions) ablation of the pusher around the spherical fusion stage,** which would be harder to achieve by x-ray mirrors than was the case for the simpler cylindrical geometry of the fusion stage used by Teller in Mike. According to the June 1967 Sandia Corporation's originally secret thermonuclear weapons development history (extract below), the new Los Alamos Maniac I computer's first task in 1952 was to determine "... the flow of radiation pressure along channels between fission and fusion components of the bomb ..."

Rather than the x-rays simultaneously compressing the whole cylinder (which is what Hansen and Morland show in their illustrations, ignoring the time factor), the thermonuclear burning wave - if the x-rays are slowed down by plastic foam filling the radiation channel - propagates along the cylinder beginning at the end nearest the primary stage: by having a sufficient "spark plug" of fissile material in the core (both to irradiate compressed LiD with neutrons, fissioning some of the lithium into tritium, and also to provide heat to initiate fusion in the compressed fusion fuel), a self-sustaining burning wave could be established, so that you could increase the yield simply by making the cylinder longer (the Bassoon was increased up to 25 megatons in the W41, five times the Tewa test yield!). In such a design, the role of plastic foam blocking the radiation channel, is to deliberately *prevent* the rather limited primary stage x-ray energy yield from being diluted excessively by flowing over the vast surface of the secondary stage cylinder, which would reduce the compression and lead to secondary stage fizzle. The whole point of the hydrogen bomb is to get away from the critical mass yield-limiting problem of fission weapons, and you can't do that if there is no way to control the spread of the vital x-ray radiation from a primary stage when you have a very large secondary stage to compress. The diagram below applies to the basic W41, but *note that the neutron shield between the primary and secondary stage is there to prevent pre-initiation of fission in the core sparkplug of the secondary, cylindrical stage, but in a very clean weapon like 95% clean, 5% fission Redwing-Navajo, there is no spark plug so the neutron shield is replaced with a neutron channel to allow primary stage neutrons to fission lithium, producing tritium in the secondary stage, prior to its compression.* Furthermore, Bassoon's 15% and 87% fission yield versions showed the effect on both bomb yield and mass of replacing the U238 ablative pusher around the fusion cylinder with lead to make it much cleaner. The results showed that doing this drops the mass from 15,735 to 12,158 lb, while only reducing yield from 5.01 to 3.53 megatons. **Moreover, while you get an area of 520 square miles giving a fallout dose over**

**the first 50 hours of 1000 R (survivable indoors with the shielding provided by most city buildings) for the "dirty" version, this drops to only about 150 R for the "cleaner" version, for land equivalent surfaces outdoors.** As a result, details of nuclear warhead designs were published in various books and articles. At this point (if not in 1949 with Fuchs, Greenglass and other spies giving Stalin the bomb "for peace"), sensible people realise that "secrecy" markings on documents sooner or later fail to protect you from dictators, so you instead need credible nuclear deterrence and civil defense.









Reagan tells Soviet jokes



Answering FAQs about the Nuclear Test Films



ABOVE: Dr Gregg Spriggs of Lawrence Livermore National Laboratory, who gave **Hans Rosenwinkel (producer and director) a PBS America TV interview recently (in the 2021 TV documentary on the Bravo test, called "Burning Sky", first broadcast on PBS America digital channel in the UK on 26 June 2021 after being broadcast 3 days earlier in the USA; we taped it for personal use but due to copyright cannot upload it to youtube)**, claiming that water spray in most Pacific nuclear tests led to yield underestimates so Bravo would be 22 megatons not 15 megatons, leading - *if correct* - to even greater reduction in the measured effects of nuclear weapons of given megaton yields shown in Glasstone's book: *"They did their best back in the 1950s ... on Bravo they had adjusted the analysis somewhat ... when you do a shot over water, as the shock wave moves out it picks up water and it makes the shock wave heavier, so we think now that the yield of Bravo - and in fact the yield of all of the barge shots that were done in the Pacific - were about 27-50% higher than what was originally reported, so Bravo, instead of being 15 megatons, might actually have been on the order of 22 megatons!"*

(We're not updating the Pacific nuclear tests yield data on this blog until we see the reports with hard data on this, because the 1950s yields were also substantiated by radiological yield from fission product and actinide samples in fallout, which doesn't depend on shock wave data or fireball expansion films! However, this claim about H-bomb yields in the Pacific being underestimates is interesting, and Dr Spriggs may well have secret-classified reports hidden from public view, with more data which will eventually be declassified and become available. If indeed the total fireball expansion-derived yields are higher, then the *percentage fission yields* - derived from fallout sample analyses - must be smaller by a similar factor, which would have huge implications for not just nuclear weapons effects but also for constants in the semi-empirical models of nuclear weapon designs for megaton yields!) He has also **put some recently restored films of nuclear test explosions on youtube**. The most interesting, in view of the photo of the "upright" test configuration of the 5 megaton Redwing-Tewa bomb at Bikini in 1956 (see photos at the top of this blog post for a pic of the Mk41 Tewa test prior to testing) **shows the primary stage being ejected vertically upwards out of the fireball and creating a second smaller fireball above the main fireball produced by the main cylindrical secondary stage** (which is heavier and nearer to the ground), **an effect analogous to that seen in the 1962 Starfish test** (basically the two stages are exchanging radiation which causes them to recoil apart as the weapon case vaporizes, and the lighter primary stage gains the most velocity, due to straightforward conservation of momentum):

Operation Redwing - Tewa 37369



Operation Redwing - Tewa 37363



Operation Redwing - Tewa 37373



Operation Redwing - Tewa 37376



ABOVE: **Bravo's 1 kiloton x ray channeled fireball travelling in vacuum pipes towards Station 1200 at 2,286 metres (1.4 miles) distance. Most high quality versions of films and photos showing such interesting weapons effects are still classified because they contain interesting information on the effects which are denied public viewing, along with EMP waveforms showing transit times between fission and primary stage ignitions. Station 1200 at 1.4 miles from Bravo survived 130 psi, despite being designed for just 50 psi from a yield of just 6 megatons. If Dr Gregg Spriggs is correct to claim that Bravo's real yield was 22 megatons (rather than 14.8 megatons), it will mean that a structure designed to survive 50 psi can survive at 1.4 miles from a 22 megaton bomb, which is even more impressive than 15 megatons.**

UPDATE - 6 April 2022:

The roots of the present crisis are covered in General Sir John Hackett, DSO and Bar, MC, LLD, et al., *The Third World War*, Book Club Associates, 1978. Hackett was an Australian born Oxford classics and history scholar, who went into the British Army when Hitler went off the deep end in 1939, being wounded while leading a parachute brigade against the Nazis at Arnhem. He ended up NATO Commander

of the British Army on the Rhine, when he started a political war with the British Government by writing a famous letter in *The Times* complaining that NATO was under resourced and needed strengthening to resist Russia. He survived that by claiming he was wearing his NATO hat, not his British Army hat, when writing the letter (the British Army bans its employees from

writing politics in the press, whereas NATO doesn't). After retirement he became Principal of King's College, London, and then wrote *The Third World War* to point out the risk of NATO weakness encouraging Russian aggression, just as he had seen happen with the Nazis in the 1930s, stating in *Authors' Note and Acknowledgements* (p 359):

"Those who argue for the reduction of defence expenditure in the countries of the West .... seem to live in a land of total make-believe ... What they [Russia] have been doing is building up huge armed forces, far greater than what would be necessary, in any conceivable situation, for their own defence, at a cost gravely detrimental to domestic development ... and in a mode essentially *offensive*. ... We have assumed that enough is done to ensure that, when the Soviet machine travels of its own momentum along a path of miscalculation and mischance towards an attack on NATO, the West, at some cost, is able to survive. It is possible, of course, that enough will not be done. The outcome is then likely to be different. ... the free countries of the West would be in no position to withstand political pressure from the USSR, which would enjoy the fruits of a military victory, without having to fight for it."

Hackett and associates outline what they consider the most probable nature of WWIII, pointing out (on page 31) that in 1978 only 35 out of 180 governments in the world were truly democratic, and the remainder relied on dictatorial succession or coup d' etat for changes of leadership. They assume (Appendix 5, p355) that the West has a nuclear inferiority by 4 August 1985 when they assume WWIII breaks out, with 2450 ICBMs, IRBMs and SLBMs on the Russian/Warsaw Pact side, compared to just 1900 available to the West. They assume that Russian assistance to Egypt causes subversion and overthrow of Middle East countries (Saudi Arabia, Iraq, and Kuwait) in 1984, with Saudi's Sunni sect versus Iraq's Shia sect being provoked by insurgency to cause war. Russia also attacks Western assets, ships etc, leading American hawks to propose (p 282): "Why not now go over to the offensive, it was asked, and finish off forever the threat ... East Germany and Poland could be freed and the advance could be pushed forward in the Ukraine as far as the Dnieper. Control of the Ukrainian harvest and of the Dnieper hydro-electric installations would be enough to cripple any further war effort by Soviet Russia. It would be tempting to go on and liberate Georgia and control Baku, but that ... would expose too long a line of Western communications ..." Instead, the Russian Kremlin followed President Truman's doctrine of 6 August 1945 (p 285): "They insisted on an immediate move towards the threat of nuclear action. A single atomic attack on a Western target would be enough to demonstrate their determination. A simultaneous message would be sent to the US proposing the immediate withdrawal of all foreign forces ... It was important to make it absolutely clear to the Americans that this was a single attack to demonstrate what might happen if they refused Soviet demands. It was not to be seen as an immediate prelude to a general nuclear offensive. ... Most views were fairly near the truth so far as a proposal for negotiation was concerned, but few guessed that this would be accompanied by a Hiroshima-type demonstration, or that the time-table would be as narrow and threatening as it turned out to be ... he demanded that the US should send representatives within one week ... failing which further selective strikes would be carried out."

After the explosion, NATO retaliates with a similarly small-scale tit-for-tat nuclear strike, being constrained by escalation fears (a factor which contrary to CND propaganda, was the prime factor in all NATO Cold War plans). Hackett comments on the Cold War conflict between oppressor Russia and its victim Ukraine (p 306): "Soviet policy had always been at pains either to suppress or appease any symptoms of independence of mind on the part of Ukraine [Khrushchev gave Ukraine the Crimea in 1954]. Its enormous contribution to Soviet food supplies, its position in the front line of Soviet territory facing the West, bordering on Poland, Czechoslovakia, Hungary and Romania, and its vast hydro-electric potential, had made it, after Russia proper, the most vital component of the [Soviet] Union."

Hackett argues (p 311) that Marxism only took root among a "group of people accustomed to absolutism", such as those in the Tsar's Russia of 1917 or Ho Chi Minh's Vietnam, and failed elsewhere, unless continuously enforced by a regime of brutality and violence. Put another way, "Marxism" was essentially successful merely because it became a mere public relations symbol or label, used as a handy excuse for excesses by dictators, just as certain religions were likewise used as mere excuses for invasions labelled Crusades or Holy wars in the past. His conclusion (p 327) is that WWII would end Cold War Russia's role as a Western superpower, leaving China (largely a rival to Russia in the Cold War) to take its place: "After each major war this century, a great empire has melted away. After the 1914-18 war, the defeated Austro-Hungarian empire. After the 1939-45 war, the victorious British empire." The basic problem remains that relatively few countries are completely democratic and free, while many have military power. The cheap-fix of disarmament for this world is beautifully debunked by world history following the nonsense written on pages 101-2 of the 1931 book by Major Victor Lefebure, *Scientific Disarmament* (published by the communist Victor Gollancz's Mundanus Ltd imprint in London, with glowing Introductions by 14 disarmament "experts" including David Lloyd George and H. G. Wells): "The claim that a peacefully disposed country, highly organised for industry, with vast facilities for manufacture of all kinds, can suddenly spring from a condition of disarmament to one of intense armament appears to be untenable." (Hitler disproved him soon after being elected two years later. This book was given a lengthy and laudatory review in *The Observer* on 1 March 1931 by a Major-General Sir F. Maurice!)

Update: 17 April 2022. President Biden is sending further military aid for Ukraine to fight Russia, \$800 million including 500 Javelin armour penetrating missiles, two hundred M113 APCs, eleven Mi-17 helicopters, eighteen 155mm howitzers, 40,000 artillery shells, 300 switchblade drones. The problem is that this kind of proxy conventional war can drag on, devastating the country. If you remember the neutron bomb "controversy" from 40 years ago, Reagan's admin argued (1) they'd deter invasions, and (2) if some kind of accidental special military adventure/invasion occurred, then they'd swiftly stop the armour without any collateral blast, fire or fallout damage (1 kiloton enhanced radiation/reduced blast at a few hundred metres doesn't cause any damage apart from a flash of nuclear radiation to stop/deter invasions, UNLIKE conventional weapons which leave the country in ruins and hurt civilians). **According to Sandia's declassified Defense Nuclear Agency *Nuclear Weapons Characteristics Handbook*, pages 13-15: "With the advent of the Korean War in 1950 ... our focus shifted to tactical nuclear weapons. The Mk7 bomb and the Mk9 280mm artillery fired atomic projectile were the first of these weapons. In the early 1950s we started developing nuclear warheads for short-range missiles such as the Honest John and the Corporal ... In 1962, President Kennedy directed that permissive action links (PALs) be incorporated in all NATO deployed weapons to protect against unauthorised use."** Deterrence was lost in the 90s due to lying anti-nuclear propaganda disarmament activists. Without credible nuclear deterrence, we are back to long sieges of cities, where attrition in the face of dwindling food and ammunition determines the outcome, as in the 11 month long siege of Sebastopol in Crimea, from October 1854 to September 1855, or its siege from October 1941 to July 1942 (**during June 1942 alone, Germany reportedly dropped 20,528 tons or 20.5 kilotons**



**- more than twice the blast yield of the Hiroshima bomb - on Sebastopol**, which of course goes unnoticed by the anti-nuclear propagandists who don't care deterring conventional war).

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<https://www.standard.co.uk/news/world/president-zelensky-putin-russia-ukraine-nuclear-weapons-b994743.html>

**President Zelensky warns world to prepare for Russian nuclear attack on Ukraine**

**The Ukraine leader called for more air raid shelters and more anti-radiation medicines**

**By Sami Quadri, Evening Standard, london**

Ukrainian President Volodymyr Zelensky has said the world should be ready for the prospect of Vladimir Putin using nuclear weapons.

Speaking from the country's capital Kyiv, Mr Zelensky voiced his fears the Russian president could also be prepared to use chemical weapons against Ukraine.

The leader called for more air raid shelters and more anti-radiation medicines.

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<https://www.dailymail.co.uk/news/article-10726663/Increasingly-desperate-Vladimir-Putin-attack-NATO-base-stop-weapons-getting-Ukraine.html>

**'Increasingly desperate' Vladimir Putin could attack a NATO base to stop the western weapons that are stalling his invasion from getting to Ukrainian forces, ex-national security chief warns**

**Putin could strike a NATO base in order to halt the transfer of arms to Ukraine**

**Former Government security adviser Lord Ricketts made the warning yesterday**

**Putin may even attack aircraft or convoys headed to Ukraine from NATO, he said**

**By JESSICA WARREN FOR MAILONLINE**

**PUBLISHED: 19:00, 17 April 2022**

Vladimir Putin could consider striking a NATO base in order to halt the transfer of arms to Ukraine, a former British security chief has warned. Lord Ricketts, the Government's first national security adviser, said yesterday that Mr Putin is becoming 'increasingly desperate to choke off the flow of arms' to Ukraine. He may even do this by attacking aircraft or convoys headed to the country from NATO, Lord Ricketts suggested. ... Ukraine's president, Volodymyr Zelensky said that it is important for Russia not to win any territory in the Donbas region. ... 'We shouldn't wait for the moment when Russia decides to use nuclear weapons ... We must prepare for that,' he said.

This is the place and time to once more debunk Dr Hans A. Bethe's nonsense anti-Reagan address in April 1982 to the American Physical Society, "We are not inferior to the Soviets" (published on pages 90-98 of Bethe's book *The Road from Los Alamos*, Touchstone, 1991). Bethe admits in table 1 of his article that the Russian empire had 2,490 ICBMs, SLBMs and bombers, compared to just 2,030 American delivery systems, and also in his table 2 that the nuclear warheads on these systems amounted to 8,000 equivalent megatons on the Russian side, compared to just 5,600 American. However, he then made the totally false propaganda claim that this vastly superior Russian nuclear force "is cancelled by the lower accuracy of their missiles"! This is totally misleading "chalk versus cheese" propaganda fake news from Bethe, because the American and Russian targetting strategies were different: Russia was targetting soft targets with higher yields that don't require high accuracy, **whereas America was trying to target Russian Kremlin leaders bunkers and Russian nuclear weapons in their very hard missile silos, not civilian targets, with lower yield nuclear warheads that produce less collateral civilian damage and injury, but that do require high accuracy unlike the Russian targetting strategy, and in fact America FAILED due to errors in its crater sizes predictions, a fact only discovered at the end of the Cold War! They have been trying to rectify it ever since by "converting" old surface burst tested H-bombs into underground earth-penetrator warheads that can overcome the crater predictions errors by penetrating the ground to tens of metres depth to increase the energy coupling into hardened silos and bunkers, but such converted warheads simply haven't been fully system-proof-tested to work due to the atmospheric test ban treaty!** In addition, Bethe quotes Brezhnev propaganda speeches, claims falsely that neutron bombs aren't needed to *deter* invasions since NATO can somehow use anti-tank missiles against a concentrated tank barriage once it starts (a very dangerous gamble, disproved by numerous surprise attacks in history, and also requiring huge conventional forces mobilized at borders that repeat the 1914 world war disaster), and claims falsely that both sides already have "vast overkill capacity", which is simply not true if in a dangerous crisis *one side evacuates target cities and takes to shelters before taking declaring war or taking provocative actions, as Britain did when evacuating kids from London before declaring war in 1939!*

Bethe's book *The Road from Los Alamos* also contains other nonsense that make clear that he is double-talking subjective political drivel that ignores the real issues. For example, in his chapter headed "Meaningless Superiority", on page 87 he states: "There can be no victor in a nuclear war." Nuclear weapons were used in WWII and victory was declared in both European and Pacific theatres. Bethe just adds the word "nuclear" to the anti-war drivel of the 1920s and 1930s post-WWI pseudo-pacifists, who would think of gas bombs as a cheap short-cut for disarmament propaganda to close down discussions of victory, in the manner that nuclear weapons are used for this purpose today. But a war ended by a demonstration high altitude EMP effects shot which causes fewer casualties than a conventional bomb is a "nuclear war" that evidently disproves this, and then you get into the problem of what he means by "victor". You don't necessarily engage in a war to achieve the kind of "victory" Bethe sneers at; you fight to survive as a free society. But from the left-wing political angle, all you need to say is that you believe the weapons will be used in enough quantities, on such targets to make the survivors envy the dead, and bob's your uncle: the debate closes in your favour since nobody wants such an argument. However, did Hitler drop his 12,000 tons of deadly tabun nerve agent (or his smaller sarin nerve agent stockpile) in a knockout blow to win World War II, or did he not? Those weapons were found in 1945 when Germany was invaded, and dumped in the Atlantic. The point is, by distributing gas masks to everybody and shelters to keep the liquid droplets off the skin, the gas bomb threat was discredited. The same applies to simple fallout radiation precautions: anything to keep fallout off the skin stops the beta burns that the Marshallese and Japanese fishermen suffered in March 1954, while simple shelters also shield gamma rays from fallout, which are of relatively low energy for the Russian designs with U238 casings, where

neutron capture produces a lot of low energy gamma rays from Np239 and U237 for the crucial sheltering period of 1-10 days after detonation. Bethe ends his meaningless "Meaningless Superiority" article by declaring on page 89: "Negotiations on arms control must not be linked to 'good behavior' ... We Americans should have learned in Vietnam that we are not the policeman of the world." This is a simply a reversal of the lessons of WWII, it is a retreat to the isolationism of the 1930s, when America followed Britain's stupidity and failed to get involved in actively stopping or credibly deterring Germany and Japan from starting WWII. If anyone wants to draw lessons from the Vietnam war, he should do so [using Ambassador to the Soviet Union Foy D. Kohler's analysis of the megatonnage dropped on Vietnam and its failure to win the war due to simple Vietcong shelters and survivalism which completely repudiates strategic bombing, linked here.](#)

Regarding nuclear shelters, Bethe attacks them on page 60, where he admits that if nuclear weapons are used on military targets, "then fallout shelters will be very useful", he then irrationally reverses this in the next sentence by saying that since Russian nuclear weapons are targetted on soft targets (countervalue), not hard silos (counnerforce), such an attack is "highly unlikely because it is ineffective against an invulnerable missile force." Bethe knows nothing about the true hardness of the Russian shelter system against all kinds of nuclar attacks, counterforce and countervalue. But his argument against shelters, by claiming Russia has superior deterrence in being able to do countervalue attacks, contradicts his own claim in another chapter of his book, where he claims that Russia's superior equivalent megatonnage and missiles stockpile is not superior for deterrence, because it has less accurate missiles. Bethe merely redefines the meaning of "superiority" to whatever suits his subjective political agenda. What are we trying to deter? According to Bethe's Russian inferiority argument, we are trying to deter Russia from damaging our nuclear warheads, *which is not a problem because the Russian missiles are inaccurate. But that's not what most people are concerned about, which is deterring Russia from attacking civilians.* In that sense, Russia has superiority, because accuracy is not a problem for hitting targets the size of cities (as compared to missile silos or Trident submarines). Accuracy is then irrelevant. But it is also largely irrelevant in any case, since submarines hidden at sea are hard to hit so any "counterforce" strategy against a nuclear trident of mixed forces (planes, submarines hidden at sea, and silos) is half-baked at best, and **in any case, Russia had not only vast countervalue superiority, but also counterforce superiority, since it turned out that simplistic Glasstone crater size analysis was false and massively exaggerated, so the nuclear weapons targetted on Russian silos wouldn't have done the job Bethe supposed, even ignoring Russian submarines hidden at sea!**

In yet another deceptive propaganda essay, Bethe's chapter on SDI claims that "to be useful" a Western ABM system or space based defence (Reagan's strategic defence initiative) would have to shoot down "virtually all of the 10,000 or so" Russian weapons! Again, this is Bethe's highly bigoted view of how Russia will use nuclear weapons in WWII: he thinks they will disarm themselves by firing everything they have to overwhelm a Western ABM or other defence system. This is the 1914 and 1939 "knockout blow" delusion that Kahn debunks. Since they have a protected second strike force, they don't need to do this. The far more likely threat of a rogue missile or limited demonstration attack in the manner of Hiroshima or Starfish Prime, is ignored by Bethe. It isn't ignored by Russia which does have an ABM around Moscow for this reason! Bethe then on page 124 then claims that a high altitude nuclear detonation releasing 1 kev soft X-rays to pump a directed "x-ray laser" (in fact you don't need anything so fancy, since a tube or case around the weapon, with one end open, will function to send out a directed pulse of x-rays, as proved in numerous tests, starting with the x-ray fireball coupled into vacuum tubes in the Bravo test of 1954), is useless because warheads can be protected by "A crushable layer installed under the [missile] skin [which] could prolong and weaken the [x-ray ablative "blow off"] pressure wave ... thereby protecting both the skin an its contents." Again, this is deliberately scientifically vague, because no calculations about the range, yield, cost to the missile in terms of size and



payload increase trade-off, etc., are given. Sure, you can harden missiles by making use of the large take up of energy in deformation beyond the elastic limit, which is how Lord Baker's clever design for the Morrison table shelter worked in WWII (as with car crumple zones, denting absorbs energy very efficiently, allowing a 3mm steel sheet to stop a collapsing house, something you can't achieve cheaply if you design a shelter not to be dented, the classic delusion of green engineers set to work on shelter design). But you can use the 14 Mev highly penetrating neutrons from a neutron bomb to melt the fissile material in an incoming enemy warhead, causing it to fizzle, ending that threat!

(Reagan's controversial SDI nuclear explosion pumped X-ray laser was first suggested in 1977 by Lawrence Livermore's **George Chapline Jr.** and was tested underground in Nevada in 1978, with the x-ray detector instrument breaking down so no results came. In summer 1979, Chapline held a meeting at Lawrence Livermore lab to design a re-test, where Peter Hagelstein suggested an improvement which led to the successful "Dauphin" sub-20 kt nuclear explosion test of the Excalibur pumped x-ray laser underground Nevada on 14 November 1980. It used laser rods made of doped fogbank like the lowest density x-ray transmitting foams in the W76 warhead, but until it is declassified in full with the test results, it will remain on the sci fi shelves of the library. **Hegelstein has one very vague report online about x-ray laser technology, a data-dump list of possibilities and a lot of references, but no illustrations or definite schemes.**)

According to the declassified **American 30 July 1963 "DCI (Director of Central Intelligence) Briefing to the Joint Chiefs of Staff"**, **the Russian nuclear warhead designs up to 1963 below 150 kt all exceeded 600 lb in mass, and adds on page 8 that: "There is no information indicating that the USSR has successfully designed and detonated low yield thermonuclear devices with enhanced radiation and reduced fission or devices with the secondary heavily loaded with or alloy such as the US TUBA device [Tuba was the secondary stage used in the 773 lb, 18" diameter, 46.6" long higher yield Polaris W47-Y2 missile warhead, tested to yield 1.2 megatons in the Dominic-Harlem test dropped from a B52 to detonate with a yield-to-weight ratio of 3.42 kt/kg, at an altitude of 13,645 feet, 17 miles south of Christmas Island on 12 June 1962]. In the case of reduced fission devices the chance of collection and analysis of test debris is markedly reduced for low yield tests and thus the absence of debris analysis indicating the detonation of such devices in the 1961-62 test series cannot be considered conclusive negative evidence."** The document also states that Kingfish and Bluegill Triple Prime high altitude tests at altitudes of about 100 and 50 km in 1962 were both 200 kt warheads, not 410 kt as previous data suggested. The diagrams from this very important declassified Top Secret nuclear designs document, which plot a graph of **Russian versus American warhead test results** (the ratio of yield to mass of bomb, with identified data points for specific Russian and American tested devices including the cleaner "Ripple II", a hollow rippled fusion second stage design by John H. Nuckolls of Livermore lab, which when tested as 7,139 lb Dominic-Housatonic, yielded 10 megatons with alleged 99.9% clean fusion yield on 30 October 1962, superseding the success of previous secondary stages Bassoon, Cello, Fife, Oboe, Calliope and the spherical Tuba) and tabulate a comparison, are of poor quality - hand-drawn not typeset due to the problems of disseminating Top Secret data to printers - but are sufficient to see the key facts (note that this data has NEVER been superseded from the Russian point of view, because this direct data on Russian nuclear weapons from fallout samples ended in 1963 due to the atmospheric nuclear test ban treaty, which moved tests deep underground until they were halted altogether, so since 1963 there has not been fallout analysis data to determine Russian designs):

**Tape-recorded White House Meeting on the Dominic Nuclear Test Series, 5 September 1962 (Meeting on the Dominic Nuclear Test Series, 5 September 1962, in Tape 20, Box MTG, President's Office Files, John F. Kennedy Presidential Library (JFKL), Boston, MA.):**

**President Kennedy: What about our tests? How would you summarize our tests ... how would they? If they [Russian nuclear warhead designers] were talking about our tests would they dismiss them quite as you dismiss theirs?**

**U.S. Atomic Energy Commission Chair Dr Glenn Seaborg (Nobel Laureate for discovering plutonium): I think that they would not be able to understand the sophistication of some of the biggest advances we have ...**

**Unidentified participant: our most advanced idea, namely the Ripple concept, leads to an inherently clean system and maximum efficiency ...**

**McGeorge Bundy: It may be worth just a moment to explain what that is ... Because that is probably the most important technical development in our own Dominic series.**

**Carl Kaysen: That's the sort of breakthrough of the Livermore laboratory.**

**QUOTATION SOURCE: J. Grams, "Ripple: An Investigation of the World's Most Advanced High-Yield Thermonuclear Weapon Design", Journal of Cold War Studies, v23 (2021), issue 2, pp. 133–161.**

**ABOVE: Nuckolls 1994 opennet paper OSTI-10173564 (Lawrence Livermore paper UCRL-JC-117385), "Achieving Competitive Excellence in Nuclear Energy, The Threat of Proliferation, The Challenge of Inertial Confinement Fusion" explained the history of how nuclear warhead design improvements suggested isentropic compression of tritium-deuterium capsules (the maths had already been published in 1972 in J. Nuckolls, L. Wood, A. Thiessen, and G. Zimmerman, "Laser Compression of Matter to Super-High Densities: Thermonuclear (CTR) Applications," Nature, p239):**

**"In 1957 I was assigned the task of designing a fusion power plant driven by the explosion of a series of hydrogen bombs in a giant steam-filled hole in granite. Although this approach would eliminate the magnetic confinement system, the scale is very large, and the hydrogen**

bomb is initiated by a fission explosive. ... The feasibility of very small fusion explosions follows from the fact that the thermonuclear burn rate is proportional to the density of the fusion fuel, and the fact that fusion fuels can be imploded to at least 1000 times normal density. The inertial confinement time is proportional to the characteristic dimension of the exploding system. Therefore, for a sphere, a thousand-fold increase in the density (and burn rate) makes possible a thousand-fold reduction in the radius ... less than 1% of the pellet needs to be ignited, since the radius of the compressed pellet is six times larger than the range of the 3.5-MeV alpha particle arising from the DT reaction. If  $(1/6)^3 \sim 0.5\%$  of the pellet mass is heated to ignition, this critical-size hot spot will then initiate a burn wave which ignites the remainder of the pellet. For this pellet, the minimum required ignition energy is about  $5 \times 10^3$  J. After compression, the ignition is also energetically 'free'. ... Because the fusion energy is so much larger than the minimum energy required for compression and ignition, an ablative implosion (which is typically 10% efficient) may be used to achieve both compression and ignition. However, because the velocity required for ignition (of a milligram) is roughly three times the velocity required to compress 1000-fold, the overall efficiency is reduced to 1%. ... The 14-MeV neutrons may be absorbed in several tens of g/cm<sup>2</sup> of lithium rich material. Lithium fission and (n,2n) reactions may then be used to regenerate the tritium consumed by the DT burn. The soft x-rays and hot plasma are readily absorbed in the lithium-rich material. ... To meet these coupling requirements with the as yet unknown driver, I proposed in the late 1950s to adapt a powerful thermonuclear weapon concept invented by Edward Teller in the early 1950s. I proposed to "indirectly drive" the ablative implosion with thermal x-rays generated by rapidly injecting energy from the driver beam into a cavity which has high-Z walls and contains a DT pellet coated with a low-Z ablator. Re-radiation of thermal x-rays back and forth across the cavity rapidly reduces temperature gradients, and rapid ablation of the pellet surface by the x-rays generates the required implosion pressures while reducing the rate of growth of fluid instabilities. To prevent excessive thermal losses into the cavity wall due to the adverse scaling of the surface to volume ratio as the cavity is made smaller, I decreased the cavity temperature and the average initial density of the imploding capsule. **In the early 1980s, the U.S. declassified the use of this "indirect-drive" approach in ICF - and the fact that this approach was used in thermonuclear weapons driven by fission explosions.** [Emphasis added] ... A program was conducted by LLNL and LANL to implode ICF capsules in underground nuclear experiments driven by underground nuclear explosions. These experiments have been named 'Halite-Centurion'." (Note that there are good technical reports by Nuckolls with the equations predicting fusion explosion charge efficiency [here](#) and [here](#).)

Grams states that the Ripple designer, Lawrence Radiation Laboratory physicist [John H. Nuckolls](#), received authorization from President Kennedy to test the first version of Ripple on 2 July 1962, initially set for 5 days later, 7 July, in the crowded Operation Dominic series (America was trying to test every wild idea it could possibly construct and ship to the Pacific, before signing a cessation of atmospheric tests, and some shots failed to get off the ground in time, most notoriously the Uracca high altitude test which Dr Ogle was desperate to have fired at an altitude of 1,300 km, leading to furious technical arguments between Kennedy, his adviser McGeorge Bundy, and testing organiser Dr Frank H. Shelton, documented bitterly in the three books about the 1962 tests by Dr Shelton, Dr Ogle, and Dr Seaborg, respectively, namely Shelton's *Reflections of a Nuclear Weaponeer*, Ogle's *A Return to Testing*, and Seaborg's *Kennedy, Khrushchev and the Test Ban*, all giving very different perspectives on the subject - when Dr Shelton finally got Uracca ditched, Dr Ogle was so furious he tried to pull out of making any more Los Alamos EMP measurements in the high altitude Fish Bowl series in retaliation). (Uracca was first designed to be 410 kilotons, then due to NASA's fears a spaceman might get a few rads, Ogle sold out to protests and compromised and accepted 200 kilotons, but the spacemen put their lives ahead of national security so then the yield was lowered still further, until it was practically a waste of time, due to the very high burst altitude and the evident failure to obtain any significant x-ray effects data on MIRVs

for such an unrealistically low yield.) Nuckolls vividly described the overloading of the computer resource time for nuclear device design studies at that hectic testing time, and the desperate use of punched IBM cards for 1-d calculations and only a few 2-d calculations:

"I was the lead nuclear designer and this [Ripple secondary] was my first nuclear test. Not nearly enough time or computer resources were available. Livermore's nuclear design experts believed success was impossible. [John] Foster and [Peter] Moulthrop were notable exceptions. I severely constrained the nuclear design to minimize calculations, to use parts that could be rapidly fabricated, and to avoid or overpower failure modes. Nuclear design, engineering, and fabrication were completed in two months. (Today, years would be required.) Invaluable assistance was provided by my sole assistant, Ron Theissen, a technician on assignment from the Computation Department. Several other designers volunteered to assist. Day and night, Ron and I punched IBM cards as inputs for hundreds of one dimensional calculations. Although the device was an extreme design, enough computing time was available for only a few simple two dimensional calculations."

Five days behind the original schedule, the first 9,162 lb 56.2x123" Ripple on 11 July 1962, a B-52 dropped Ripple as the very last ever air-drop of Operation Dominic at Christmas Island in the Pacific, named shot Pamlico - it yielded 3.85 megatons with a 14,330 ft detonation altitude to avoid local fallout, and was watched by Nuckolls from the beach on Christmas island, where the first British thermonuclear weapons had been tested five years earlier (Seaborg's book *Kennedy, Khrushchev and the Test Ban* explains how the emerging scandal about the fallout contamination of Marshallese in 1950s tests made it difficult to resume testing in the Marshall Islands in 1962, so American testing moved to Christmas Island for Operation Dominic, 1962): "The giant mushroom cloud surged upward and stabilized at an altitude of 80,000 feet. The Soviet spy ship was steaming over the horizon. ... My colleagues were amazed at my beginner's luck and counseled me "quit while you are ahead." But, I resonated with the creative optimism of Lawrence and Teller. I had no fear of failure. Foster's rule was if you don't fail half the time, you aren't trying hard enough. His dynamic spirit inspired Livermore. "You can excel! I want to run so fast anything the Soviets build will be obsolete. ... In August and September [1962], Ron and I worked day and night to design an even more radical nuclear device [Ripple II]. We further optimized the [primary stage x-ray] pulse shape [using fogbank interstage x-ray pulse shaping] to achieve practically isentropic fuel compression [**"if the flow is very gradually compressed (area decreases) and then gradually expanded (area increases), the flow conditions return to their original values. We say that such a process is reversible. From a consideration of the second law of thermodynamics, a reversible flow maintains a constant value of entropy. Engineers call this type of flow an isentropic flow; a combination of the Greek word "iso" (same) and entropy"**"]. On October 1, this device was exploded in the "Androskoggin" nuclear test conducted in the Johnston Island area of the Pacific. A small percent of the calculated yield was generated. A fizzle!? Everyone believed I had "snatched defeat from the jaws of victory."



*ABOVE*: Dr Frank H. Shelton, Dr Bill Ogle, Dr Herman Hoerlin and others at Johnston Island, celebrating the successful firing of the EMP and ABM effects shot 1.4 megaton Starfish Prime at 400 km altitude, with drinks in paper cups half an hour after the midnight detonation, 9 July 1962.

ABOVE: John H. Nuckolls, inventor of the 99.9 percent clean 10 megaton Ripple II H-bomb, based on eliminating the compression of a heavy pusher, and instead using ablative recoil to isentropically compress the fuel itself to higher density than is possible when a heavy pusher is absorbing energy and being compressed itself. The Androscoggin test consisted of a Kinglet primary and Ripple II secondary, 6,647 lb, 128.5x56.2", with a 15–16 megatons predicted yield, but an actual yield of only 63 kilotons. Kennedy received a request on 12 October to retest Ripple II, while Ripple III was tested as Calamity on 27 October 1962, yielding only 800 kt instead of the predicted 3 megatons. **Kennedy authorised the retesting of Nuckoll's Ripple II, which was done with modifications as the Housatonic shot on 30 October 1962, yielding 10 megatons from 7,139 lb, 147.9x56.2", without the use of a lead pusher, with a fusion yield of 99.9%, i.e. 99.9% clean (a vast improvement on the 98% fusion 1961 Russian 50 megatons test),** according to the "Report by Commander Joint Task Force Eight," 4 June 1964, pp. L-B-5-1–2, as cited by Grams. Grams makes it clear from declassified reports quoting Seaborg clearly stating that the 98% clean 50 megaton Russian test in 1961 and other clean Russian shots used a lead pusher, which was an entirely different process to the clean mechanism of Ripple II.

Dr Nuckolls explains that the origin of the successful clean 10 megaton Ripple II nuclear weapon design was actually the effort to develop peaceful fusion energy (which failed with lasers but worked with a very low yield fission primary stage providing x-rays!) in his paper **"Contributions to the Genesis and Progress of ICF", pages 1-48 of the 2007 book, *Inertial Confinement Nuclear Fusion: A historical Approach by its Pioneers* (Edited by Guillermo Velarde and Natividad Santamarfa).** Basically, the fusion burn rate is *directly* proportional to the fuel density, which in turn is of course inversely proportional to the cube of its radius. But the inertial confinement time



for fusion to occur is proportional to the radius, so the fusion stage efficiency in a nuclear weapon is the product of the burn rate (i.e.,  $1/\text{radius}^3$ ) and time (i.e., radius), so efficiency  $\sim \text{radius}/(\text{radius}^3) \sim 1/\text{radius}^2$ . Therefore, for a given fuel temperature, the total fusion burn, or the efficiency of the fusion stage, is inversely proportional to the square of the compressed radius of the fuel at the time! The radiation loss (cooling by inverse Compton effect) problems that Teller's classic superbombs suffered from can be virtually eliminated by lowering the x-ray energy (temperature) to below 1 KeV, because the radiation losses to the nuclear bomb case are of course proportional to the fourth-power of the radiating temperature:

"I was introduced to Teller's radiation implosion scheme in the summer of 1955 ... As a 24-year-old assistant to Harold Brown, the 26-year-old TN Design Division Leader, I studied nuclear explosives and weapons design code development and use. In 1957, Brown asked me to help evaluate the feasibility of producing commercial electric power by periodically exploding half-megaton yield H-bombs in a one-thousand foot diameter, steam-filled cavity excavated in a mountain. This large-scale ICF scheme was part of Teller's Plowshare program to develop peaceful uses of nuclear explosives. I realized that a few hundred electron volt radiation temperature might suffice to implode and initiate a very small-scale fusion secondary. Radiation losses into a hohlraum wall decrease with more than the fourth power of the radiation temperature. With low radiation temperatures, excessive wall losses can be avoided ... Implosion symmetry is enhanced because the radiant energy absorbed in a thin layer of the high Z walls of the hohlraum is efficiently re-radiated multiple times and has a velocity a thousand times larger than the implosion velocity of a fusion capsule. Energy radiates from hot areas to cooler areas, rapidly equalizing temperatures. Growth rates of fluid instabilities are reduced because kilovolt range thermal radiation from a few hundred eV temperature black body rapidly ablates the unstable interface in low atomic weight materials. ... Distortions and instabilities generated by energy concentration processes located in the driver are effectively decoupled from the spatially separate secondary implosion when the secondary is energized by black body radiation from the driver-heated hohlraum walls. Consequently, radiation coupled drivers and fusion capsules may both be operated near their stability limits to achieve maximum performance. Driving pressures of several hundred megabars and implosion velocities of hundreds of kilometers/second can be generated by ablation with several hundred eV radiation temperatures. At these temperatures, material sound speeds are several hundred kilometers/second, comparable to the implosion velocities required to isentropically compress DT to more than one thousand times liquid density. ... In 1961, my group leader, Peter Moulthrop; nuclear designer Ray Birkett; and I addressed the pusher fluid instability problem by separating the pusher from the ablator ... the fusion energy generated can be  $10^4$  times larger than the Fermi energy of the compressed DT! The gain can be further increased by igniting a relatively small fraction of the DT mass in a hot spot near the center of spherical convergence. Fusion yields can then be amplified by TN propagation from the hot spot into a much larger mass of DT. ...

"I developed an ablatively driven spherical rocket implosion to compress DT to high densities without use of a pusher. A sustained ablatively driven implosion is made possible by use of a sustained driver input and a suitable ablator. Optimum pulse shapes make possible very high isentropic compression of most of the DT while igniting a central hot spot. The temperature of the hot spot is amplified by adjusting the pulse shape so that a strong shock is generated near zero radius, and by using a hollow target design containing low-density DT gas. ... With near ideal pulse shapes, very high-gain, pusherless, near isentropic, low temperature radiation imploded fusion capsules that ignite propagating burn are feasible. ... Livermore's professional weapons designers regarded my tiny low-cost, high gain ICF target designs as science fiction. We joked about "Nuckolls' Nickel Novels" (referring to my prolific series of classified memos). Without nuclear tests, these radical target designs could not be taken seriously. Fortunately, my efforts were strongly supported by Carl Haussmann, who succeeded Brown as TN Division Leader, and by Foster, who succeeded Brown as Livermore director in early 1960.

(Brown was selected by President Kennedy to lead Department of Defense (DOD) Research and Engineering.) ... Livermore was focusing all possible efforts on responding to high yield Soviet atmospheric nuclear tests (including a 57-megaton explosion). ... In April 1962, the U. S. responded to the Soviet tests by launching an intensive nuclear test series. Livermore's advanced warheads achieved a major success in an "Admiral's test" of the Polaris submarine launched ballistic missile. This Polaris weapons system addressed the first strike instability, by creating a secure second strike nuclear force. ...

"In April 1962, a few months before the scheduled end of the atmospheric test series, I proposed a nuclear test of a radical high-yield TN design so fantastic that my colleagues thought it was an April Fool's-day joke. In this radical design, a high-performance TN secondary was imploded with a highly optimized pulse. Foster dispatched me to Washington to support approval of a nuclear test of my scheme. I was accompanied by Roland Herbst, a theoretical physicist and experienced weapons designer. I briefed AEC Chairman Glenn Seaborg, and my former boss, DOD's R and D leader Harold Brown. President Kennedy approved the nuclear test the last experiment in the test series."

Dr Nuckolls' scientific and political viewpoint was disastrous when he eagerly used his position as Director of LLNL (at the end of the Cold War, when the research budget was drying up!) to try to start a speculative pie-in-the-sky peaceful nuclear fusion energy program (leading to a major argument with U.S. Secretary of Energy Watkins in May 1992 when Watkins visited LLNL and demanded nuclear deterrence against proliferation and nuclear terrorism, not peaceful fusion energy!), but Nuckolls' views on deterrence were always sound and he warned clearly against nuclear disarmament scams for "peace":

**"The author [John H. Nuckolls] concludes by warning that nuclear disarmament may eliminate the highly successful deterrent mechanism for avoiding another major world war. In a world made safe for major conventional wars by the apparent "elimination" of nuclear weapons, the leaders in a conventional World War III - involving unimaginable suffering, hatred, terror, and death - would be strongly motivated to introduce nuclear weapons in the crucial decisive battles. Even if diplomacy could "eliminate" nuclear weapons, man's knowledge of nuclear weapons can never be eliminated. The paradox is the attempt to eliminate nuclear weapons may maximize the probability of their use." - John H. Nuckolls, "Strategic defense initiative: critical issues", UCRL-92803, Conference: 4. international conference on nuclear war, Erice, Sicily, Italy, 19 Aug 1984, <https://www.osti.gov/biblio/5529030-strategic-defense-initiative-critical-issues>**

Nuckolls and **Lowell Wood** (another LLNL physicist, best known for his secretive work on EMP effects from nuclear explosions and for chairing a controversial EMP commission, which produces reports with the vital technical data we need removed due to secrecy concerns) also wrote an interesting article called "The Development of Nuclear Explosives" (published in the 1988 book *Energy in Physics, War and Peace*, edited by Wood) stating on page 312: "The development of high-yield weapons was motivated strongly by rising concern in the U.S. Government regarding the potentially unstoppable character of Soviet land forces, as the nature of the war machine that had broken Nazi power in the 1943-45 period became clearer in post-war analyses. The basic Soviet doctrine of massing forces and breaking through the enemy front, even at very high costs in men and material, came to be seen as very difficult to counter. However, since it involved concentrating a division into a few square kilometers for its effectiveness, 0.1-1 megaton nuclear explosives used as area (blast + thermal) weapons came to be seen as an effective and affordable response by the defense: a single high-yield weapon costing under a million dollars could neutralize an armored division costing several orders of magnitude more."

Ripple warhead designer Nuckolls with Lowell Wood and others had in 1972 published a paper about the new physics involved, in *Nature* vol. 239, pp. 139–142, see the illustration below. In simple terms, what Nuckolls does to the Teller-Ulam thermonuclear secondary stage is analogous to what happened in the evolution of primary fission stages: get rid of the thick, dense tamper/pusher surrounding the fuel, to allow the available implosion energy pulse to compress the fuel, and to do at the correct rate to get "isentropic compression", i.e. keeping the shock energy in mechanical work (without the conversion of implosion shock energy into heat energy, which reduces the component of the energy being used for compression). The rate of delivery of X-rays can be controlled by low density plastic foams used as baffles and for delayed re-radiation of soft x-rays. To design the shape in detail, an iterative scheme is used, where a range of basic guesswork possibilities are all simulated in detail on a computer, and the best results are then picked out and used as the basic templates for another range of designs, but honing-in on the most promising shapes, thicknesses, etc. This process is repeated many times to optimise a final design, before a nuclear test is done to check that it actually works as intended.

The controlled higher compression factor you get without having to also compress an inert, thick dense pusher (you just use a relatively thin, say 1-cm thick beryllium ablator surface shell) allows efficient, isentropic compression, of a hollow lithium deuteride sphere with D + T gas in the centre to act as an initiator, providing neutrons to kickstart the fission of lithium in the lithium deuteride fuel, replacing the Teller-Ulam fissile sparkplug; something only possible due to the much greater compression in Nuckolls design than in the older Teller-Ulam system.

If you think this is questionable and don't want to believe in a 99.9% clean H-bomb, note that *Nature* published this paper suggesting that a laser system could be used, in place of the x-ray pulse from a 10 kiloton fission primary stage that Nuckolls used in all of his 1962 tests, and which is way more powerful than laser pulses! There is also an article, **"Energy Balance in Fusion Hohlräume", in the unclassified Los Alamos Nuclear Weapons Journal, issue 2, 2009, pages 6-11, which contains two diagrams side-by-side, comparing the use of laser beams and x-rays, such as from nuclear fission primary stages, for focussed x-ray compression of fusion capsules, including a detailed description of the fogbank x-ray mirror lining needed to focus soft, 0.2 keV, x-rays isotropically on to the fuel capsule, and including x-ray shadowgraphs of implosions showing the shockwaves with and without fogbanks/x-ray mirrors which are composed of "20-mg/cm<sup>3</sup> silica aerogel" - the same issue has a helpful article about the use of fogbank interstage material in W76 warheads:**

**"... Fogbank is an essential material in the W76 warhead. During the mid-1990s, Fogbank production ceased ... As time passed, the precise techniques used to manufacture Fogbank were forgotten. ... Los Alamos computer simulations at that time were not sophisticated enough to determine conclusively that an alternate material would function as effectively as Fogbank. ... Despite efforts to ensure the new facility was equivalent to the original one, the resultant equipment and processing methods failed to produce equivalent Fogbank. ... in some cases the current impurity levels were much lower than historical values. Typically, lower impurity levels lead to better product quality. For Fogbank, however, the presence of a specific impurity is essential. ... Scientists found that modern cleaning processes, used in the manufacture of the feed material, clean it better than the historical processes; the improved cleaning removes an essential chemical. ... The historical Fogbank production process was unknowingly based on this essential chemical being present in the feed material. As a result, only a maximum concentration was established for the chemical and the resulting impurity. Now the chemical is added separately, and the impurity concentration and Fogbank morphology are managed. ... Just as modern scientists unraveled the secrets behind the production of the Japanese katana**

[samurai sword], materials scientists managed to remanufacture Fogbank so that modern methods can be used to control its required characteristics. As a result, Fogbank will continue to play its critical role in the refurbished W76 warhead."

ABOVE: the transmission of soft x-rays inside nuclear weapon through the absorbing K-shell electron barrier of aluminium plasma generated by the ablation of an aluminium fusion capsule pusher (aluminium in this example is a plasma at a density of 14 grams/litre and at a temperature of 500,000 K), Figure 6 in the officially (Atomic Weapons Establishment, Aldermaston) approved UK Government paper, "Science of nuclear warheads" by Keith O'Nions, Robin Pitman and Clive Marsh, *Nature*, v415, 21 Feb 2002, pp. 853-857: **"Little has been published about nuclear warhead science. Here we set out elements of the programme that will underpin future assessments of the safety and performance of Britain's warheads in compliance with treaty obligations. ... The approach builds upon previous nuclear test experience and seeks to replace the requirements for further empirical test data by developing a deeper theoretical and experimental understanding of the relevant fundamental science. This must then be drawn together and applied to the nuclear warhead system using intensive numerical modelling. ... Lasers and pulsed power machines are able to achieve relevant densities and temperatures and also produce the only source of data on X-radiation flows. ... In the very hot matter of a nuclear warhead, thermal radiation is particularly important. The crucial parameter is the radiative opacity, which quantifies how thermal radiation interacts with matter by absorption, emission and scattering. It is sensitive to the composition, temperature and density of the material and expresses the degree to which a material impedes radiation flow. ... [Figure 6] The subject material is heated indirectly using a foil radiator or hohlraum, and allowed to expand against a plastic tamper. ... Figure 6 describes the techniques used and shows a comparison of an aluminium opacity experiment with the corresponding calculations. ... As well as opacity and radiation flow, laser experiments can be designed to test theoretical models of complex radiation/hydrodynamic phenomena (Fig. 7). ... [Figure 7] Here a laser is used to heat a ... hohlraum, which in turn heats a piece of aluminium (shown in blue). The resulting jet of aluminium penetrates a piece of polystyrene, which is radiographed by an X-ray backlighter also driven by the laser. The results from two numerical codes are shown together with the X-ray record from the**



**experiment. Both codes reproduce the main features of the flow but show different development of the jet tip. Analysis of the detail will indicate where the theory and algorithms must be improved."**

Our point in emphasising the 99.9% clean (fusion) 10 megaton Ripple II bomb, air dropped successfully in 1962, is to demonstrate that the technology and science *does* exist to make even large nuclear weapons a credible deterrent without any fallout collateral damage. Although the neutron effects from 10 megaton bombs in sea level air are usually severely curtailed by neutron scattering in nitrogen, this can be prevented by using two such devices burst 5-20 seconds apart in time, so that the neutron burst from the second device undergoes hydrodynamic enhancement in the large hemisphere of low-density air behind the shock front created by the first burst, tailored to cover the desired area (the precise time between the two detonations is the control determining the radius of efficient hydrodynamic enhancement of the neutrons from the second detonation). So there are excellent prospects for making the neutron bomb credible as a deterrent against invasions, air burst near borders at an altitude that prevents fallout and blast/thermal collateral damage but deters military field equipment and personnel from invasions.

UPDATE (30 April 2022): <https://www.dailymail.co.uk/news/article-10766541/Ben-Wallace-predicts-Russia-use-parade-9-announce-mass-mobilisation-population.html>:

**"Putin 'could declare war on the world's Nazis' on Victory Day (9 May 2022): UK predicts Russia will use parade on 9 May to announce mass mobilisation of reserves for final push in Ukraine to defeat West's support for Kyiv ... Britain's Defence Secretary Ben Wallace has predicted that Putin may instead use the parade to declare war on the world's 'Nazis' and mobilise his reserves ... Earlier this week, Putin vowed to use nuclear weapons against any country that dares to 'interfere' with Russia's war in Ukraine."**

A couple of points about this prediction: (1) Russia has at least 2 million reserves, which would boost the total Russian armed forces to 3 million (the 1 million normal Russian military includes a 1 year conscription of personnel aged 18–27); (2) this would be a major step up what Herman Kahn called the "escalation ladder". To give some kind of context to the threat a Russian military of 3,000,000 presents us with, please remember that as we stated earlier in this post (above): "When on 8 December 1991, the presidents of Russia, Belarus, and Ukraine dissolved the USSR, the Soviet military was 3.7 million strong. **"From 1945 to 1948, the Soviet Armed Forces were reduced from about 11.3 million to about 2.8 million men"**, while the Soviet Union actually increased in size, as puppet governments were installed across half of Europe, despite the American nuclear weapons monopoly until 1949."

ABOVE: **Russian state TV Channel One's 60 Minutes show reportedly broadcast the missile trajectories Russia could use and the delivery times to hit London, Paris and Berlin (202, 200 and 106 seconds, for nuclear missiles fired from Kaliningrad).** This is because Russia has been left with the world's largest nuclear stockpile of countervalue (city destroying) low-accuracy missiles but high-yield warheads. Such weapons can also be used for high altitude large area EMP strikes, where missile accuracy is again largely irrelevant as it is for large city targets. Until the **crater exaggerations farce was exposed firmly around 1988**, we had - on

paper but not in reality - strategic and tactical *counterforce superiority* due to the fact that our missiles were so much more accurate than Russian ones, we could hit their missile in their silos (provided we attacked first, before the Russian missiles were launched), and we also had tactical nuclear weapons to deter invasions, which was a credible deterrent to Russian aggression. After 1988, however, the Glasstone

and Dolan cratering scam was exposed for what it was, debunking our strategic counterforce deterrent (which was never much good against enemy subs hidden at sea anyway), and then the anti-nuclear "peacemakers" persuaded politicians to disarm our tactical counterforce nuclear weapons, leaving us without a credible deterrent to stop invasions. In the 1962 Cuban missiles crisis, Kennedy had clear nuclear superiority and was able to use that in his TV speech on 22 October 1962 to persuade Khrushchev to back down (he said that a single nuclear missile launched from Cuba, even by accident, against a Western target, would be met by a "full" retaliatory nuclear response), but today Kennedy's gunboat diplomacy option has a much higher risk because we have surrendered in the nuclear arms race and Russia is way ahead. And it's not just Mr Putin. China and North Korea have tested thermonuclear weapons and **North Korea's Leader Kim Jong Un recently stated in Pyongyang that it would use nuclear deterrence against "escalating nuclear threats from hostile forces"**. In other words, the dictatorships are now using nuclear deterrence against us to prevent our interventions for peace, just as Hitler did when he built the Luftwaffe: "Margarita Simonyan, editor of state broadcaster RT and one of the Kremlin's highest-profile mouthpieces, declared on TV last night that the idea of Putin pressing the red button is 'more probable' than the idea that he will allow Russia to lose the war. 'Either we lose in Ukraine,' she said, 'or the Third World War starts. I think World War Three is more realistic, knowing us, knowing our leader'." - <https://www.dailymail.co.uk/news/article-10762143/Ukraine-war-Russian-state-TV-says-nuclear-strike-probable-losing.html>

**"Alexander's career was piracy pure and simple, nothing but an orgy of power and plunder, made romantic by the character of the hero. There was no rational purpose in it, and the moment he died his generals and governors attacked one another. The cruelty of those times is incredible. When Rome finally conquered Greece, Paulus Aemilius was told by the Roman Senate to reward his soldiers for their toil by "giving" them the old kingdom of Epirus. They sacked 70 cities and carried off 150,000 inhabitants as slaves. How many they killed I know not; but in Etolia they killed all the senators, 550 in number. Brutus was "the noblest Roman of them all," but to reanimate his soldiers on the eve of Philippi he similarly promises to give them the cities of Sparta and Thessalonica to ravage, if they win the fight. ... the intensely sharp preparation for war by the nations is the real war, permanent, unceasing ... the battles are only a sort of public verification of the mastery gained during the "peace"-interval. ... Nations, General Lea says, are never stationary - they must necessarily expand or shrink, according to their vitality or decrepitude. Japan now is culminating; and by the fatal law in question it is impossible that her statesmen should not long since have entered, with extraordinary foresight, upon a vast policy of conquest - the game in which the first moves were her wars with China and Russia and her treaty with England, and of which the final objective is the capture of the Philippines, the Hawaiian Islands, Alaska, and whole of our Coast west of the Sierra passes. This will give Japan what her ineluctable vocation as a state absolutely forces her to claim, the possession of the entire Pacific Ocean; and to oppose these deep designs we Americans have, according to our author, nothing but our conceit, our ignorance, our commercialism, our corruption, and our feminism. General Lea makes a minute technical comparison of the military strength which we at present could oppose to the strength of Japan, and concludes that the Islands, Alaska, Oregon and Southern California, would fall almost without resistance, that San Francisco must surrender in a fortnight to a Japanese investment, that in three or four months the war would be over and our republic, unable to regain what it had heedlessly neglected to protect sufficiently, would then "disintegrate," until perhaps some Caesar should arise to weld us again into a nation." - William James, *The Moral Equivalent of War*, speech delivered at Stanford University in 1906.**

UPDATE: <https://www.dailymail.co.uk/news/article-10774235/Ukraine-war-Russian-state-media-threatens-UK-underwater-nuke.html>: "Russia's chief propagandist threatens to 'plunge Britain into the depths of the sea' with underwater Poseidon nuke that would

trigger a 1,600ft radioactive tidal wave and wipe the UK off the map. Dmitry Kiselyov, known as 'Putin's mouthpiece', threatened the UK with Poseidon underwater nuclear bomb. By CHRIS PLEASANCE and WILL STEWART FOR MAILONLINE. PUBLISHED: 08:36, 2 May 2022 UPDATED: 13:21, 2 May 2022. Dmitry Kiselyov, a man often known as 'Putin's mouthpiece', used his Sunday night show to call for attacks on Britain with a Poseidon underwater drone that he said would trigger a 1,600ft radioactive tidal wave and 'plunge Britain to the depths of the ocean.' The drone 'has capacity for a warhead of up to 100 megatons', Kiselyov claimed - several thousand times the strength of the bomb dropped on Hiroshima - which would 'raise a giant wave, a tsunami, up to 1,640ft high' - enough to reach halfway up Scafell Pike, the tallest point in England. Speaking against a background graphic showing the UK being erased from the world map, Kiselyov added: 'This tidal wave is also a carrier of extremely high doses of radiation. Surging over Britain, it will turn whatever is left of them into radioactive desert, unusable for anything. How do you like this prospect?'"

This exaggeration of nuclear effects is debunked by the [table of nuclear test water waves data declassified in Dolan's Capabilities of Nuclear Weapons, DNA-EM-1, Table 2-9, Measured Water Wave Data from Nuclear Tests \(linked here\)](#): the biggest water waves are generated by the deepest scaled depth of burst, e.g. the 32 kiloton Wigwam test in the Pacific detonated at 2,000 feet depth in 15,000 ft of water, which gave a peak water wave height of 118 feet at 2,000 feet range (the wave height scales up in proportion to the square-root of bomb energy yield, and decreases inversely with increasing distance from surface zero). This height will increase by a factor of 56 when you increase yield from 32 kilotons to 100 megatons, so the wave height is 6,600 feet at 2,000 feet from surface zero. The problem now is that (1) Scafell Pike is 15 miles or 80 kft from the Irish Sea (the Ravenglass Estuary, appropriately the most alpha particle and 59 keV low energy gamma active place in Britain, due to Am-241 in the mud from Sellafield, amounting to nanocuries per gram of dried mud), a range which would reduce the wave height to just  $6,600 \times (2/80) = 165$  feet, and (2) the Irish Sea is only 1,000 feet deep at most! If detonated just off Ravenglass Estuary, you wouldn't get any tidal wave because there would not be the depth of water required; if you detonated it as the deepest part of the Irish Sea, which is 1,000 feet deep, the horizontal target range would increase, reducing the wave height at Scafell Pike to below the 165 feet we just found, and you'd get a further reduction because the scaled depth of burst for 100 megatons in 1,000 ft of water would make it a shallower burst, reducing the fraction of the yield that is coupled into the water as water waves! This is before calculating the attenuation and breaking of a water wave when it runs far inland and up a mountainside!

There is now detailed published data on the Russian underwater nuclear tests: see Vice Admiral E. A. Shitikov's paper, *Testing ships at the Novaya Zemlya test site* (see illustrations of the ship set ups for the 1955 and 1957 underwater tests, below): "On Novaya Zemlya, three large-scale full-scale experiments were carried out to study the effect of the damaging factors of an atomic explosion on ships. ... First experience, September 21, 1955 ... to test the atomic charge for a 533 mm torpedo, to assess the impact of an underwater nuclear explosion on ships, and to obtain experimental data to develop the theory of an underwater nuclear explosion ... in Chernaya Bay at the Novaya Zemlya test site, September 21, 1955, power 3.5 Kt, depth 12 m. In the center of the battlefield was a small minesweeper T-393 project 2531, from which a torpedo with a charge was lowered on a cable to a depth of 12 meters. This operation was led by Lieutenant Commander E.L. Peshkur. Target ships were installed at six radii from 300 to 3000 meters. Surface ships stood side and bow to the center of the explosion, submarines - in the surface and underwater position at periscope depth. ... S-19 - due to the fact that the cork on the torpedo tube was knocked out (in accordance with the test program, the front cover was open) , about 15 tons of water entered the first compartment (the damage was repaired by personnel in two days). ... the sinking radii amounted to 300-400 meters, significant damage to light surface ships occurred from a shock wave at a distance of 500-600 meters. Damage to the superstructures of light surface ships from



an air shock wave - at a distance of 700-800 meters. Insignificant damage - at a distance of 1200-1300 meters. ... Immediately after testing B.V. Zamyshlyayev promptly carried out a study in which, in particular, he showed that when the same charge is buried by 70 meters, instead of 12 in the experiment, the effect increases by about one and a half times (in deep water)." There is a lot more to follow, but it is probably best organised into a book rather than blogged about...

ABOVE (update on 13 May 2022): 100% clean H-bomb design (cartoon style sketch, not design blueprint). The basic ideas are illustrated in a previous blog post from 2016, [linked here, which describes also the use of von Neumann-Fuchs invention \(28 May 1946 patent "Method and apparatus for releasing nuclear energy" of a beryllium oxide ablator as the compressive mechanism in the wall of a fusion capsule. It's clear that the use of plastic and various ablative fusion stage capsule walls underwent a lot of evolution even in the 1950s. That 2016 blog post also gives the references to Teller's idea of magnetic compression of the secondary stage in nuclear weapons, and John S. Foster's work on magnetic flux compression conventional systems to try to power that \(however, as we explain, a small nuclear primary stage might be the only way to get it to go!\)\). Another application of such technology is Project Orion, a nuclear impulsive drive that is actually practical, tested technology for space exploration which Joseph Friedlander has summarised from blog posts here on The Next Big Future \(note that the accidental declassification of the secrets of plastic foam filling the radiation channel of the Mk41 Basoon nuclear device - contrary to its use as a radiation mirror to](#)



delay outer case metal ablation in earlier "sausage" devices tested at operations Ivy and Castle, and the Swift, Swallow and Swan primary stage tests in secret UCRL 4725, dated June 1956, *originated from the incorrect implementation of a decision to declassify only a 6-pages section in UCRL-4725 about nuclear explosives for propulsion of nuclear rockets for space exploration!*).

*ABOVE:* Zeldovich and Sakharov's January 14, 1954 report, *On the use of the product for the purpose of compressing the superproduct RDS-6s* which suggested using x-rays reflected by a suitably shaped radiation case on to a spherical fusion secondary stage (a simplified Teller "Alarm Clock", with fissile material in the centre to release neutrons when compressed, lithium deuteride around it which would be hit by neutrons from the fissile material when compressed to fission lithium to yield tritium, an outer shell of uranium-238 as a "pusher" and final fission stage since the 14 MeV neutrons from D+T fusion can fission U-238 efficiently). However, Yuri Trutnev improved this design by placing light material such as beryllium oxide (used as the D+T compressor in the Fuchs-von Neumann superbomb patent) or indeed any light elements (such as the carbon and oxygen in plastics), around the the lithium deuteride. Photo shows President Putin meeting the designer of later successful Russian devices, Yuri Trutnev (then 90), on 15 November 2017. Trutnev says that the **22 November 1955 successful Russian 1.6 megaton thermonuclear test** went to Zeldovich's head and he later had a run of three failed bomb designs in a row, before Trutnev was permitted to test his own new design ion 23 February 1958 in the arctic, with great success (860 kilotons air burst at 3 km altitude); the Russians at this time started testing cylindrical secondary stages in an effort to make warheads more compact for ICBMs and SLBMs. Photos of the first AWRE British single warhead for a Polaris SLBM show it to have a *tapering secondary stage* (an innovation first revealed by Howard Morland in 1979, *see illustration below*, which also highlights the problem that Los Alamos expert Vernon Kendrick told Morland at Los Alamos in November 1978 that modern warheads "don't use spark plugs [which Kendrick pointed out to be spheres of plutonium throughout the secondary, a 1960s development] anymore" because the fissile or alloy pusher does the job of releasing neutrons to fission lithium into tritium, formerly done by spark plugs, but Morland *still included* a 1950's style cylindrical spark plug in his diagram of a modern 300 kt MIRV warhead and failed to show the tapering of the outercase in line with the tapering of the secondary), whereas photos of otherwise very similar Russian SLBM warheads first deployed in 1978 show *no tapering of the secondary stage cylinder*. Russia adopted cylindrical secondary stages in place of spherical secondaries, to reduce the diameter of thermonuclear warhead to fit missiles *because it was using x-ray mirroring by the outer casing* which makes the weapon

bulkier than the American designs; whereas America after 1956 filled the radiation channel with a baffle of low density plastic foam instead of using case mirroring, and so went in exactly the opposite direction to the Russians (America went from cylindrical to spherical secondaries for smaller thermonuclear warheads, whereas Russia did the reverse because it was still using the outer casing as an x-ray mirror and needed more space for the mirroring geometry). Putin is seen presenting Trutnev with the Order of Merit to the Fatherland, First Class.

Update (16 May 2022): <https://www.politico.com/news/magazine/2022/05/16/scenarios-putin-nukes-00032505>: By GREGG HERKEN, AVNER COHEN and GEORGE M. MOORE, 05/16/2022 12:00 PM EDT. "Scenario 1: Remote atmospheric test. Least provocative would be Putin's resumption of above-ground nuclear testing — by detonating a low-yield nuclear warhead high ... Scenario 2: Atmospheric detonation above Ukraine. A more provocative demonstration would be an ultra-high-altitude explosion of a more powerful weapon over Ukraine itself. In a 1962 test, the U.S. detonated a 1.4-megaton H-bomb in the mid-Pacific, 250

miles above the Earth. The resulting electromagnetic pulse unexpectedly knocked out streetlights and disrupted telephone service in Hawaii... Scenario 3: Ground explosion in Ukraine. Most dangerous — and, for that reason, perhaps least likely — would be using a tactical nuclear weapon to achieve a concrete military objective such as disrupting the delivery of weapons to Ukrainians... In May 1945, weeks before the successful test of the first atomic bomb in New Mexico, former President Harry Truman's advisers considered, briefly, the option of a harmless but spectacular demonstration of the revolutionary new weapon as an alternative to its military use, in hopes of compelling Japan to surrender. For practical reasons — there were too few bombs in the U.S. nuclear arsenal, and some feared a dud — the demonstration option was never presented to Truman. But the warning shot idea would surface again and be taken more seriously. During the 1961 Berlin crisis, former President John Kennedy was presented with the option of firing a nuclear-tipped missile at Novaya Zemlya to show American resolve. Israel has also considered a nuclear demonstration; prior to the Six-Day War, in May 1967, Shimon Peres proposed detonating a nuclear device over the Sinai desert to head off the conflict. Six years later, the Israelis again briefly entertained the notion of a high-altitude nuclear warning shot to force an end to 1973's Yom Kippur War. In 1981, with the Cold War again heating up, Secretary of State Alexander Haig — a former NATO supreme allied commander — let slip that "there are contingency plans in the NATO doctrine to fire a nuclear weapon for demonstrative purposes..." regardless of what Putin decides, engaging Russian forces in direct combat should only be a last resort."

**UPDATE (24 May 2022) on yield of Bravo nuclear test:** it was mentioned (above) that nuclear effects researcher Dr Gregory Spriggs of Lawrence Livermore National Laboratory, who has been scanning by computer and re-analyzing old films of nuclear test fireballs, went on TV last year (during a documentary about the Bravo test) to argue that due to water entrainment by the fireball affecting the fireball

expansion rate, its total yield may have been 22 megatons, not 15 megatons as extrapolated from fireballs over land in Nevada. There are some LLNL reports now available, giving some of the basic data on fireball expansion rates and blast arrival times, that backs up what he said (though for other Pacific tests like Zuni and Dakota, not Bravo - note that I would love to see all the fireball films of Bravo in high definition taken from surface level, rather than aircraft above the clouds, since the rather grainy declassified ones so far available show that normal clouds obscured most of the fireball and its thermal pulse at the surface and that you can also see a secondary fireball running down the diagnostic x-ray vacuum pipes!). **I'm particularly interested in this because I did an analysis of the G. I. Taylor fireball expansion formula (on vixra) giving analytical - rather than Taylor's shoddy numerical integration ("cheating" according to maths professor!) proof of the correct formula (Taylor didn't even get his numerical integration right, making errors in his derivation; so much for the wonders of his so-called brilliant mathematical brain!).** The new LLNL papers are by Kelly M. Cook, *Shockwave Arrival Times from Operation Redwing and Operation Upshot-Knothole*, LLNL-TR-814172, which in table 1 shows that Redwing-Zuni whose fireball was partly over an island in the south of Bikini Atoll but also extended over the surrounding lagoon water to the north and ocean to the south, had an entrainment coefficient of 1.075. The value is 1 for no entrainment like the Nevada Climax air burst, and the yield is proportional to the cube of the coefficient, i.e.  $1.075^3 = 1.242$ , so megaton range tests over ocean would have a fireball yield at least 24% higher (or more than 24% if the area covered by highest overpressures had a larger ratio of water area to land area). Secondly, a paper by Adele Myers, *Water Entrainment in Nuclear Detonations*, LLNL-TR-758735 (extracts below) shows how a funnel of water enters the surface burst fireball in a comparable way to the funnel of water thrown up by the Baker underwater test as also shown below, *thus cooling the top portion of the fireball (which as Stanbury pointed out in his paper cited above is the only part that most city windows can see; relevant to coastal cities or cities around large river estuaries)*. She also gives graphs of relevant data and notes that this effect has a 100 kiloton yield threshold. Very interesting!

ABOVE: Hurricane 25 kt nuclear test at 2.7 m depth inside ship moored in water just 12.2 m deep at Monte Bello had severe fireball cooling by water funnel; its thermal flash yield was only about 1.4%. Fires were started by bits of the ship in very dry vegetation on nearby island, NOT by thermal flash! Also, despite lying from prime Minister Churchill about this test causing a large "tidal" wave, it didn't as the water was too shallow and there was no water inundation to the WWII Anderson shelters on the beach of the island nearest the test! (Churchill was the only person to have been in the Cabinet of the country declaring every single World War in human history, and yet he still failed to ensure the enemy was deterred, despite publically arguing for overwhelming superiority ahead of each war and also being supposedly a supreme orator and public relations genius according to the similarly deluded mass media and politically correct "historians"). It would be great if this data from a 25 kt near surface nuclear test were used to improve models of water entrainment in fireballs. It seems that the "100 kt limit" for water entrainment is misleading because all it signifies is that at yields below 100 kt you don't find a "water line" in fireball photos since the water/soil is ejected into the fireball so quickly that it cools down the *entire* fireball (not just the top section where the funnel sprays out horizontally) as seen in the Hurricane test. Similar cooling in surface bursts, caused by crater ejecta entering the fireball very quickly, accounts for the fact that thermal yields in surface bursts are lower than in air bursts. Just in case you are wondering if Russia is aware that clouds etc attenuate thermal radiation, they are; see photos below of the shielding of their first thermonuclear weapon test fireballs by clouds:

*ABOVE*: clearly some of these RUSSIAN published fireball photos of USSR tests are carelessly switched over and wrongly labelled, e.g. the 400 kt 1953 and 1.6 Mt 1955 tests are a little similar, and easily muddled up by officials in the photo archives. It will be left as an exercise for the reader to sort them properly! (There are so many similar nuclear test photos of fireballs and mushroom clouds that you get nuclear brain paralysis if you look at too many!) .... But it should be noted that confusions like this also led to errors in Dr Frank H. Shelton's *Reflections of a Nuclear Weaponeer* (2nd ed, 1990; it is identified by extra pages inserted in places with a letter after the page number), for example he reprints the same photo of 1953 shot Grable twice, once labelled as Grable, and later in the chapter on Operation Plumbbob, labelled as 1957 Priscilla! (Contrary to Dr Cary Sublette's false assertions, sorting Grable from Priscilla photos is

very easily identifiable since there was NO SMOKE SCREEN in the Priscilla test, see photo of Grable with black-and-white smoke screen clouds BELOW):

*"The U.S. press, like the U.S. government, is a corrupt and troubled institution. Corrupt not so much in the sense that it accepts bribes but in a systemic sense. It fails to do what it claims to do, what it should do, and what society expects it to do. The news media and the government are entwined in a vicious circle of mutual manipulation, mythmaking, and self-interest. Journalists need crises to dramatize news, and government officials need to appear to be responding to crises. Too often, the crises are not really crises but joint fabrications. The two institutions have become so ensnared in a symbiotic web of lies that the news media are unable to tell the public what is true and the government is unable to govern effectively." - <https://hbr.org/1995/05/why-the-news-is-not-the-truth>*

Russians being prepared for use of nuclear weapons, says ...



ABOVE: **Ukraine's President Zelensky explaining to John Simpson how his call for Putin to be stopped from starting WWII has been perverted by US media liars who love Putin, and how Putin is preparing Russia for nuclear war (although he has not yet completely prepared; Putin probably requires collaboration with China, North Korea, Iran et al. to defeat the West in WWII, and fortunately they are not yet ready to go that far according to Zelensky).** As a step forward for peace and humanity, we've set up [twitter.com/nukegate](https://twitter.com/nukegate) to fight US warmongers! The current world situation is akin to a repeat of the 1930s, with the West causing war NOT by "appeasement" (the scapegoat lie of the pseudo "historians", regardless of whether they are "for" or "against" appeasement, a total irrelevance and red-herring) but by *DISARMAMENT OF THE MOST VITAL DETERRENT CAPABILITIES WE HAD IN THE NAME OF PSEUDO-PEACE DUE TO WEAPONS EFFECTS LIARS BEING ALLOWED TO GO UNOPPOSED IN THEIR SCARE MONGERING BS FOR YEARS, TO REDUCE THE CREDIBILITY OF DETERRENCE, AND THUS TO CAUSE ANOTHER WORLD WAR*, as we can see from the following quotation from Marshall of the Royal Air Force Sir John Slessor, GCB, DSO, MC, *The Central Blue: Recollections and Reflections* (Cassell, London, 1956, page numbers of quotes are given in [square brackets]):

"[p54:] The aeroplane and the bomb enabled us for the first time to enforce submission upon people without killing them. ... [p145:] Where, therefore, blame is due, I must accept my share of it. ... my theme in this chapter can perhaps best be summarized in Sir Winston



Churchill's words, 'no foreign policy can have validity if there is no adequate force behind it...' [Slessor is quoting Churchill, *Gathering Storm*, 4th ed, p337] ... The climax of misjudgement ... was the surrender at Munich in September 1938. ... Sir Winston Churchill remains convinced that it would have been better, in all the circumstances at the time, to fight Hitler in 1938 [*note that the 1938 annexation of Sudetenland including Bohemia gave the Nazis the Joachimsthal uranium mine and many other vital war minerals and heavy industries for munitions production, enabling not just Nazi nuclear research but also conventional weapons production which helped sustain the Nazis in WWII, so the 30 September 1938 surrender to Nazi aggression in Sudetenland by Britain was not "just" about a "few Jews in a faraway land" being murdered in cold blood, or whatever Chamberlain claimed, but it was doing the OPPOSITE of "buying time for BRITISH disarmament"; Chamberlain was knowledgably and dishonestly NOT MERELY BUYING TIME FOR ENEMY REARMAMENT (he rearmed Britain more slowly than the Nazis), but he was also PROVIDING RESOURCES FOR NAZI REARMAMENT, a fact omitted in scam "history" books praising the fascist, anti-libertarian, Nazi collaborator and traitor Chamberlain and his toady pals in the British press*] ... He himself has written in his book of the overriding influence of the hatred of war in the hearts of the Democracies, and of our national unwillingness to provide the force to back our policy. ...

[p148:] [French army commander at the outbreak of WWII, General Maurice] Gamelin was a likable person, a courtly and confident old soldier; but I thought him then [*at the September 1938 meeting between Gamelin and Slessor in London, due to the Munich crisis*] as remote from reality as he afterwards proved ... At this meeting, he said he would like to attack [Hitler] on land at once, but that the French were very interested in avoiding air attack, and wanted some days to get their Air Raid Precaution [ARP] arrangements under way (actually they had no ARP worthy of the name). ... He thought that heavy air attacks on England would be difficult - it was possible, but he did not regard it as very important. ... No one can say what would have happened if war had come in September 1938. The real key to the situation was not Poland, as Gamelin thought, but Russia. ... If Russia had intervened loyally and wholeheartedly against Hitler, the whole history of the past fifteen years would have been entirely different. ... [p150:] One fact which it is essential for anyone to realise who wishes to understand ... is that *the war of 1939-1945 was the first air war*. In 1914 to 1918 the Air had been in its too early infancy to have any very significant effect. ... we really did not know anything about air warfare on a major scale. ... [p151:] Anyway, in those years immediately before the war the possibility of what was referred to as the 'knock-out blow' bore heavily on the minds of the Air Staff. We were faced with a potential enemy who could bring against us something between 1,200 and 1,500 first-line bombers [*with a combined blast and incendiary effects power in a single air raid, when correcting for correct nuclear blast and thermal devastation area scaling laws even ignoring the possibility of gas bombing, equal to a typical MIRVed nuclear missile today*]. ... There is, of course, always a tendency, which should sometimes be discounted, for Military Staffs to over-insure and assume the worst case. But it is difficult to blame the Air Staff for assuming that we *might* find the whole air-power of Germany directed against this country very early in a war. That was not impossible ... The Joint Planning Committee, in a comprehensive review of the air defence problem in late 1936, had estimated that we might have to endure prolonged attack on the scale of 400 tons a day - and that scale increased with the growth of the German striking force. ..."

"[p152:] In a minute to the Secretary of State in April 1938, the C.A.S. [Chief of the Air Staff] wrote- 'I feel strongly that the time for mincing words is past and that the Air Staff should state their view of the situation plainly. Their view is that unless the Cabinet are prepared to incur at the very least the full expenditure required for Scheme L and possibly more, we must accept a position of permanent inferiority to Germany in the air. ... in the event of war, our financial and economic strength, which the present financial limitations are designed to secure, will be of no use because we shall not survive the knock-out blow'."

"[pp.160-1:] Looking back at it now in the atmosphere of 1953, it is almost impossible to believe the extent to which financial considerations were allowed to exert such an influence in bringing us to the very lip of disaster in the face of the Nazi menace, in the years immediately preceding Hitler's war. Every undergraduate knows that a sound economic situation is an essential basis of military strength; but that principle was carried to ludicrous extremes under Mr Chamberlain's Government. I remember one of the Chiefs of Staff saying in this connexion that, as far as he could see, a certain Cabinet Minister was primarily concerned to ensure that we had enough money left to pay the indemnity after losing the war; naughty, no doubt, but that is uncommonly like what it seemed to us in those days. ... Even in the full knowledge of facts such as those I have just described, the Government continued to rule early in 1938 that the three fighting Services between them should not be allowed to spend more than about £1600 millions over the five years 1937 to 1941 - an average of little over £300 millions a year *for all three Services*; and this eighteen months after the Prime Minister [Chamberlain], as Chancellor of the Exchequer, had confirmed that he knew the Germans were spending £1000 millions a year on warlike preparations, a figure which by now, of course, was being greatly exceeded."

"[p163:] The parity idea first became theoretically the basis of Government policy in 1923 at the inception of the old 52 squadrons programme, which followed the post-war period when Britain virtually disarmed herself in the air. ... [p165:] Either we were dealing with Hitler - a mad dog out for blood - in which case ... there should have been no question of parity, or anything else but to outbuild him and kill him, regardless of any other consideration; it would have been cheap at the price. Or we were dealing with a German Government ... We should have recognised what we were up against when Austria was swallowed up - at the latest. ... we did not really get down to arming ourselves on the necessary scale and tempo until after the fall of France in 1940. ..."

"[pp.169-170:] So a time comes, when war appears really imminent, when the 'shop-window' policy [*e.g., lying propaganda fed from the prime minister to the editor of the Times to print rubbish on the front page like, a single gas bombing raid or nuclear firecracker can wipe out a city so we don't need to spend serious money on deterrence of yet another world war*] must go by the board. This time, in our view, was overdue when Hitler absorbed Austria. On the morning when the German columns were moving on Vienna (March 12, 1938), I sent a minute to the C.A.S. ... 'You may think it wise to suggest to the Secretary of State that ... we should now base our arrangements on the assumption that we may be forced into war this summer'."

Regarding Winston Churchill, a wartime friend of Slessor whose rantings about the Nazis were ignored by Chamberlain and his entourage partly (as we explained previously on this blog) because Churchill was the last person to be able to lecture them (he sent most of them to hell in his disastrous Gallipoli campaign of 1915, which led to his being fired from the Cabinet in WWI and then being deemed a "warmonger" and fool in the 1930s when he warned those men he had sent to hell in what sounded to them like a conceited, deluded, vain war-mongering prophecy), Slessor writes on pages 259-260:

"But I do not regard uncritical adulation as a compliment to any man. Mr Churchill is human, and as such makes mistakes; and the mistakes of a really big man are liable sometimes to be big mistakes. I am not so arrogant as to claim that when I disagreed with him I was necessarily right. But this book aims to be a humble contribution to history by recording events as they appeared ... I confess that I thought at the time, and still think, that policy in Scandinavia in the opening months of 1940 was one direction in which Mr Churchill's splendid aggressive spirit got the better of his judgement. ... On September 20, 1939, in the House of Commons, Mr Chamberlain said, 'What we will not do is to rush into adventures that offer little prospect of success and are calculated to impair our resources and to postpone



ultimate victory ... Strategy is the art of concentrating decisive force, at the decisive point, at the decisive moment'. That perfectly sound principle had not prevented the British Government a few days before from issuing a declaration that a German attack upon Norway would meet with the same resistance as an attack upon Great Britain; a declaration, unexceptionable in theory, to which we had about as much chance of giving practical effect as to our earlier guarantee to Poland of all assistance in our power - which amounted to precisely nil."

Naughty, but true. Chamberlain, the lover of Nazism, was the better strategist, whereas the more "experienced" military man, Churchill was a bungler competent only to issue ranting Goebbels' style propaganda, aided by brandy and cigars, who needed constant restraining and coercing by the straight-jacket of his asylum keepers like Slessor, who were often overcome by Churchill's fits of insanity. In reality, Slessor writes on page 258, Churchill was a baby who was most happy playing his war with toy bombs:

"This [fluvial mine prototype] was really a sort of toy that Mr Churchill enjoyed playing with - a toy with just the appropriate flavour of aggressive villainy. I remember him one evening, as the little gadget in the fire-bucket touched off its electric bulb, taking his cigar out of his mouth and saying, with his irresistible chuckle, 'This is one of those rare and happy occasions when respectable people like you and I can enjoy pleasures normally reserved to the Irish Republican Army'."

Churchill was not Fiddling like Nero while Rome Burned, but was Commissioning a War Song while London Burned, page 303:

"On one occasion we were walking in the [late 1940 Chequers] garden with the Prime Minister [Churchill] late after dinner. London was being bombed and the eastern sky was red with the glare of great fires. The P.M. gazed at it sadly, shaking his head. Then he said unexpectedly that it was strange that this war, unlike the last, had produced no good songs - no Tipperary or Keep the Home Fires Burning. Someone suggested the Lambeth Walk, but that was held not to count because it was pre-war. 'I must write to Novello and tell him to produce a good war song,' said the P.M., and then, with the chuckle, 'but this time it will have to be Stop the Home Fires Burning'."

Slessor finishes his book on pages 636-7, stating that the the proven role of air power in WWII, in defeating enemy air power and "Germany's oil fuel" to pave "the way for the invasion", was finally incorporated into British defence policy by Churchill in his postwar Statement on Defence, Commandment 9391: "this deterrent must rest primarily on the strategic air power of the West, armed with its nuclear weapons. The knowledge that aggression will be met by **overwhelming** (emphasis added) nuclear retaliation is the surest guarantee that it will not take place."

ABOVE: Russian President Putin used exactly the same excuse for invading Ukrainian territory that Hitler used in his invasions (precise quotation is below): he just wants to enable his nationals abroad to have the "right" to join the Russian Federation, and he repudiates the notion that Ukraine is a sovereign country because it is "just" an arbitrary political fabrication like Czechoslovakia was in 1938 (he could - and will soon - be saying that about the UN, USA, EU, UK, etc.). Russia should have been paid off at the end of the 1st Cold War in 1991, with some kind of Marshall Plan, as was used to safely demilitarise Germany, Japan et al in 1945. But the

UK instead sent BP into Russia to help them develop high technology oil and gas supplies, which they now use against us. Russia is a corrupt, bankrupt superstate which now has its own oil and gas supplies, its own massive nuclear weapons infrastructure, and a rapidly

depleting obsolete conventional weapons stockpile. There are many former USSR territories and other areas Putin can lay semi-spurious claim to, beyond Ukraine. Russia gained Warsaw, Poland, under the 1815 Vienna Settlement, losing it in 1918 when Poland became independent. Finland was gained by Russia from Sweden in 1809, Alaska became Russian territory in 1784 before being sold by the Tsar to USA, and so on. If Ukraine is "simply" surrendered to Russia, the way Chamberlain surrendered Czechoslovakia to Hitler (rewarding Nazis for aggression, using financial costs and fears of poison gas war as his excuse), WWII by deliberate "accident" or "miscalculation" will be far more likely than during the Cuban missiles crisis of 1962, when the West had a massive nuclear superiority over Russia! Gustav Bychowski's 1948 *Dictators and Disciples* explains dictatorship as an interdependence between the leader and the people, e.g. Stalin's war and territorial expansions (with help from propaganda) actually enhanced his reputation with his own people, and he really couldn't have cared less if the "capitalists" in the rest of the world disapproved.

**ABOVE: telegrams from Sir Henderson, British Ambassador to Nazi Germany, to British Foreign Secretary Halifax, 22 February 1939 and 15 March 1939 (taken from Docs on Brit Foreign Policy, s3, v4, pages 593-5 linked online here)**, proving that even at that late time, freedom of criticism of the Nazis by certain (humane) elements of the British press and Jews (!) were still being blamed for Nazi evil, and this is some 4-5 months after Kristallnacht, and many years after *Mein Kampf*. Notice that Henderson writes that he would like to see Nazi Field Marshall Goering awarded a medal by the King to appease him (*like his from the King for helping Chamberlain to give away Sudetenland to the Nazis 5 months earlier in exchange for Hitler's autograph!*), then writes that he had sympathy with the Jews, but then immediately claims that the Jewish plight is "not a basis for policy for England." When Hitler broke the worthless Munich Agreement by invading the remainder of Czechoslovakia in March 1939, Henderson telegraphed Halifax: "What distresses me more than anything else is the handle which it will give to the critics of Munich." Well, not to Captain W. E. Johns, who was fired two months previously, from his editorships of *Popular Flying* and *Flying* on his orders, for criticisms of the government using subversive methods (government pressure on his publisher!). Let's now go back two volumes, and see what Henderson and Chamberlain did to try to start World War II (while lying about it) in 1938:

**"If I am right, I do wish it might be possible to get at any rate 'The Times', Camrose, Beaverbrook Press &c. to write up Hitler as the apostle of Peace. It will be terribly shortsighted if this is not done. Cannot the News Dept. help? ... give Hitler as much credit as possible. The last word is his. We make a great mistake when our Press persists in abusing him. [He and Chamberlain "bravely" abused magazine publishers into getting Captain W. E. Johns fired from his position as editor of best selling magazines *Popular Flying* monthly and *Flying* weekly for calling for the deterrence of Nazi aggression by an arms race, in case their great lover Adolf Hitler was a trifle displeased with the British press! So much for liars who claim their exists "freedom of the press"!] ... If our only satisfaction is to slang him, then we must abandon hope of ever getting results."**

- Sir Nevile Meyrick Henderson, GCMG (1882-1942), British Ambassador to Nazi Germany, Letter to Sir A Cadogan from the British Embassy in Berlin, 6 September 1938, reprinted as document 793 on page 257 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. This particular volume doesn't appear to be available online yet, although it is the dynamite in the series! (I'm quoting this here to PROVE that there is nothing NEW in lying fascists in Western governments promoting racist fascism by

secretly wining and dining - or coercing with threats of abuse if the velvet glove over the iron fist fails to work - the populist media into supporting terrorism against the Jews and others in the name of the Devil.)

*"I reminded him [Adolf Hitler, during conversation at Berchtesgaden, 15 September 1938] that after 1914 it was said that if we had then told Germany that we would come in, there would have been no war ... He [Hitler] said a warning and a threat had the same effect. I dissented ... but I did not pursue this subject ... He said that he had from his youth been obsessed with the racial theory and he felt the Germans were one ... he is concerned with ten millions of Germans, three millions of whom are in Czechoslovakia. He felt therefore that those Germans should come into the Reich. They wanted to and he was determined that they should come in. Apart from that, he said, there was no other place where frontiers made any territorial difficulty. ... he was out for a racial unity and he did not want a lot of Czechs, all he wanted was Sudeten Germans."*

- British Prime Minister Neville Chamberlain, **BRITISH** Minute of the Conversation between the Prime Minister and the Fuhrer, 15 September 1938 at Berchtesgaden, reprinted as document 895 at page 339 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (I'm quoting this here to PROVE that talking to evil devils provides you a load of lies, propaganda, and false promises.)

**"He, Mr Chamberlain, must frankly admit that many Englishmen regarded the Fuhrer's speeches solely as words, behind which were concealed carefully prepared plans. He, Mr Chamberlain, however, regarded the Fuhrer as a man who, from a strong feeling for the sufferings of his nation, had carried through the renaissance of the German nation with extraordinary success. He had the greatest respect for this man ... After 1914 England had been reproached on many sides because she had not made her intentions clear enough. The war might perhaps have been avoided, these critics objected, if England had taken a clearer attitude. ... The Fuhrer replied that ... after a certain moment, little could be done to change the unalterable course of events. In his opinion a British warning would have come too late in 1914 as well, since the difficulties had by then reached too advanced a stage."**

- British Prime Minister Neville Chamberlain, GERMAN (Herr Schmidt, translator) Minute of the Conversation between the Prime Minister and the Fuhrer, 15 September 1938 at Berchtesgaden, reprinted as document 896 at pages 342 and 346 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (*I'm quoting this here to PROVE differences between the BRITISH and GERMAN Minutes of the Conversation between Chamberlain and Hitler at Berchtesgaden, 15 September 1938!*)

*"Herr Hitler said [to Chamberlain at Godesberg, 22 September 1938] that he would like to thank the Prime Minister for his great efforts to reach a peaceful solution. He was not clear; however, whether the proposals, of which the Prime Minister had just given him an outline, were those submitted to the Czechoslovak Government. The Prime Minister replied: Yes. Herr Hitler said he was sorry, since those proposals could not be maintained. ... Czechoslovakia was an artificial construction, which was called into being and was established solely on the grounds of political considerations." [Cf. Putin's description of Ukraine, DUH!]*

- Note of a Conversation between Mr Chamberlain and Herr Hitler at Godesberg, 22 September 1938, reprinted as document 1033 at page 465 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series,*

*Volume II, "1938", published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (I'm quoting this here to PROVE what happens when you are such an EGOTIST you think you can "negotiate" a "peace agreement" with the Devil!)*

**"The Prime Minister [Chamberlain, at the Munich Conference with Hitler on 29 September 1938] pointed out that he could not give such a guarantee [for the Sudeten evacuation of Jews by 10 October 1938 for FAST Nazi annexation] ... This led to a tirade from Herr Hitler (who was otherwise calm throughout most of the Conference), his line being that if - having asked him to stay his hand - we were not prepared to take the responsibility of ensuring the concurrence of Czechoslovakia we had better let him resume his way!"**

- Note by Sir Horace Wilson on the Munich Conference, between Chamberlain and Hitler, 29 September 1938, reprinted as document 1227 at page 631 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (I'm quoting this here to PROVE that once you start on the road to diplomacy with a Devil who takes a mile whenever you give an inch, it becomes worse than the script for an unfunny, depressing episode of Monty Python's Flying Circus. It's worse than the dead parrot sketch!)

*"Herr Hitler [to Chamberlain, in Hitler's Munich Flat, 30 September 1938]: Years ago he [Hitler] made proposals for the restriction of the use of the air arm. He himself fought in the Great War and had a personal knowledge of what air bombardment means. It had been his intention, if he had to use force, to limit air action to front line zones as a matter of principle ... he would always try to spare the civilian population and to confine himself to military objectives. ... Herr Hitler: The situation about air disarmament is just the same as it is in the case of the naval situation. If a single nation refuses to agree, all the others have to follow her example. [Secretly-rearming fascists agree to PAPER "disarmanent" for the concessions involved like lifting sanctions etc, but then secretly break the agreement! DUH!] One sees what has happened in the case of the Naval Treaty. When Japan refused to agree, all the other nations had to give up their restriction. It would be just the same if one tried to abolish bombing aircraft. ... He himself [Hitler] had proposed years ago- 1. The abolition of bombing aircraft; 2. If '1.' could not be accepted, the abolition of bombing outside a zone of 15 to 20 km from the front line; and 3. If neither '1.' nor '2.' were accepted, the limitation of bombing to a zone which could be reached by heavy artillery. ... The development of bombing from the air [Hitler declared] extends the horrors of war to the non-combatant population and is therefore a barbarism."*

- Note by Dr Schmidt of a Conversation between the Prime Minister and Herr Hitler, at the latter's Flat in Munich, 30 September 1938, reprinted as document 1228 at pages 636 and 638 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (I'm quoting this here to PROVE that negotiating with dictators is a complete farce; they are experts on "peacemaking" and "disarmament" propaganda lying scams and will turn the tables verbally and appear to be the heroes of liberty! **It was at the end of this very meeting that Chamberlain did his "magician act" of plucking a piece of paper from his pocket which outlawed war between the Nazis and British, and they both signed it, which naturally prevented WWII, just as intended! Duh! Wicked diplomacy! It is LINKED HERE with a snap of Chamberlain celebrating his "success" back home from the window of his flat above 10 Downing Street, a fraudulent travesty of propaganda lying which he called "peace in our time", but which would certainly have "earned" him a few dozen Lordships and Nobel peace prizes, if it hadn't been a staged farce.)**

**"After emphasising that the gathering was a confidential one, and that nothing was to be quoted as official, the Prime Minister [Chamberlain, speaking CONFIDENTIALLY to the "British Press" on 11 September 1938, in a typical travesty of the populist claims about "freedom of the press" etc.] said: ... War ... is something which might in the very first few hours affect the civilian population. Thereby it becomes an even more dreadful and horrible thing than it was before. The Government's policy and the Government's efforts are directed all the time to the avoidance of any such catastrophe as that [a complete lie since slow rearmament plus appeasement encouraged war as these thugs had been told repeatedly by Captain W. E. Johns in *Popular Flying* and *Flying* editorials, but they had used backhanded techniques to shut up Captain W. E. Johns by getting him fired via subversive pressure on his publisher, proving them narcissistic lying fascist-technique thugs]."**

- Text of the Prime Minister's Statement to the Press on September 11, 1938, reprinted as Appendix III at pages 680 of E. L. Woodward, Rohan Butler, and Margaret Lambert (editors), *Documents on British Foreign Policy, 1919-1939, Third Series, Volume II, "1938"*, published in 1949 by His Majesty's Stationery Office, SBN-11-591527-3\*. (This book can be read like a depressing thriller in a few hours, but we're quoting it here because, unlike history books full of 2nd-hand controversial opinions based on BS like A. J. P. Taylor's "history", it is purely a primary source of actual meeting transcripts, and it is as hard to get your hands on probably due to its expense and people in 1949 Britain wanting to "move on" from the 1930s "appeasement" disaster. Again, as repeatedly pointed out on this blog, appeasement is a wonderful thing and not a problem UNLESS you do it through coercive fear about being wiped off the face of the earth in a 1930s imaginary poison gas cloud, or a 1950s over-hyped nuclear radioactive fallout cloud (all such hyped up "threats" can be easily countered, as we will see in this post, later below). Kennedy made the point in 1940 in *Why England Slept* that appeasement was not a tragic policy; the bad policy was instead a REFUSAL to rearm FASTER than your opponent, simply out of fear of upsetting your opponent or triggering a first strike against yourself if you don't appease the enemy. Coercion is the problem, not "appeasement". By all means appease if you have might on your side and can afford to give favours, just don't do it out of WEAKNESS to encourage your opponent to keep advancing until your back is against the wall, fighting on your opponent's terms.)

ABOVE: compiler of this blog post, anti-nuclear-disarmament (aka Marx-war-for-global-communist-and-peace-through-classwar-and-racewar-and-nuclear-war) liars, **anti-fascist activist Nige Cook**, holding the **fascist Marx-media to account for causing the Ukraine War** since 2006 on this blog with his dad (who took the photo) and author of the 1990-4 *Nuclear Weapons Effects Theory* (censored from publication by Cambridge Uni press's Simon Mitten, Oxford Uni press's Donald Degenhardt, and all the various hyper left wing anti-nuclear lying newspaper editors in the UK, all duped simpletons who believed disarmament Glasstone or Nukemap style populist liars for "peace" aka russian racewar/classwar/nukewar/eurowar/corbynwar).



Russian State TV Channel 1 arguing for use of nuclear wea...



*ABOVE (VIDEO CLIP): Russian State TV Channel 1 preparing Russians *mentally* for nuclear war (*they already have nuclear shelters and a new Putin-era tactical nuclear war civil defense manual from 2014, discussed later in this blog post*) arguing for use of nuclear weapons in Ukraine war in 2023: "We should not be afraid of what it is unnecessary to be afraid of. We need to win. That is all. We have to achieve this with the means we have, with the weapons we have. I would like to remind you that a nuclear weapon is not just a bomb; it is the heritage of the whole Russian people, suffered through the hardest times. It is our heritage. And we have the right to use it to defend our homeland [WFT does he mean, the liberated components of the USSR that gained freedom in 1992?]. Changing the [nuclear use] doctrine is just a piece of paper, but it is worth making a decision."*

**PLEASE see quote (LINKED HERE) from disarmament liar Noel-Baker on gas masks being universally agreed by experts to be impossible despite their successful use in WWI, in his February 1927 BBC radio broadcast on page 31 of O'brien's official book *Civil Defence*, linked here, and note that the officials were outraged by this lying, *YET REFUSED TO DO ANYTHING TO COUNTER IT BECAUSE THE TIME WAS NOT YET RIPE*, and by the time it was ripe it was too late to avert WWII!**

BELOW: extracts from the **unclassified-yet-censored-for-publication "limited distribution" American government book by John Northrop (Handbook of Nuclear Weapon Effects Abstracted from EM-1, a few pages are linked here** to give the flavour of it, without *publishing the entire document which might contain some sensitive data somewhere, and it would take scanning time that I don't have anyway*), effectively replacing Glasstone's 1977 lies book on nuclear weapons. The terrible Carter admin politically correct – i.e. trash – 1977 version of Glasstone's book, *The Effects of Nuclear Weapons*, deletes all the useful data on protective measures nuclear tests in previous versions, creating the delusion that a nuclear bomb on an unobstructed desert creates the same effect as in a highly shielded concrete city, where buildings **PROVABLY** absorb all the effects – radiation and also blast as proved by Lord Penney to the continuing horror of the Pentagon's nuke disarmament freaks – **VERY** effectively, reducing casualties by a factor on the order of 100 from what you get for Glasstone's assumption of nukes over nudist beaches! This is an exact duplication of Britain's gas warfare lying establishment in the 1920s-30s, which refused to engage in public arguments on weapons of mass destruction to debunk lying fascist disarmament and arms control liars, who wanted a world war or peaceful Nazi world domination, not credible deterrence with honest, simple civil defense to make it credible. Over 40 years ago, Samuel Cohen's neutron bomb "controversy" raged: because modern city concrete and steel buildings are blast and heat resistant (unlike the wooden houses with charcoal stoves prevailing in Hiroshima and Nagasaki in 1945), you

can detonate a nuclear weapon at a height that eliminates modern city damage and fallout dust, but that still causes non-lethal EMP or a lethal neutron flash to stop operations by an opponent. So nuclear weapons can be used to credibly deter the invasions that set off the world wars (Belgium 1914, Poland 1939). *The CND/Corbyn claim that there will be uncontrolled automatic nuclear escalation from counterforce to countervalue attacks on civilians is like the claim of inevitable gas war knockout-blow city gas war escalation: gas knockout blow escalation was disproved.*

Russian State TV channel prepares its people for nuclear w...







ABOVE: notice the thermal flash self-shielding of wheat fields from thermal radiation! In reality, anything inflammable merely smokes from the ablation of the outer 0.1mm or so of inflammable material, and thus creates its own protective smokescreen that prevents fires, and nuclear weapons don't ignite anything unless things are practically self-combusting anyway. In very dry weather with a shifting direction breeze, one discarded barbecue can set off a mass fire, without need for any nuclear bombs: the results are identical as per the Arabian proverb, a forest only burns due to its own trees. Nuclear weapons thermal pulses are so short, unlike say the K-T impact explosion around 65 million years ago, that they can only dry out a very thin surface layer of humid "inflammable" (when dry) materials like vegetation. **This was proved by studies of the forest stands on Bikini and Eniwetok during and after multimegaton nuclear tests (photos linked here; taken from Glasstone 1957 and removed corruptly and dishonestly from future propaganda not fact based editions).** Sure, you get smoke without fire from nuclear weapons thermal radiation, but that smokescreen arises rapidly near ground zero and so

shields targets at greater distances. **The existence of an artificial skyline of concrete buildings in the "concrete jungle" of modern cities - unlike Hiroshima and Nagasaki which were mostly single storey wood frame buildings - has a similar effect as proved by British nuclear tests civil defence effectiveness researcher George R. Stanbury, who was ignored for decades for political propaganda reasons by the Pentagon. Dad, an advanced civil defence corp instructor, met Stanbury during a residential course at the civil defence staff college, Easingwold, Yorkshire (having special authority from Essex's Civil Defence chief, to attend as the course was usually for full-time employees only), and later corresponded with British nuclear test and Hiroshima and Nagasaki blast effects expert William G. Penney on blast shielding by cities by blast; he found that both knew that their own specialised effect - thermal and blast, respectively - was exaggerated, but both falsely believed that the other effect. Stanbury "knew" blast was the problem because skyline shielding would stop the radiation and getting people to simply toss wet paper on their fires on the attack warning siren would create an effective smokescreen to stop scattered thermal ray fires/burns, while Penney knew that**

**the blast absorption by damage done in modern cities would kill the blast, but thought the thermal flash would start firestorms because he hadn't bothered to investigate the firestorm mechanism in Hiroshima and had been misled to lies from the Americans on this. Consequently, neither felt inclined to launch a full-on assault on the Pentagon's nuclear weapons effects mythology!**

block; padding: 1em 0; text-align: center; clear: left; float: left;">

*ABOVE:* Russian mobile nuclear missile launchers can move quickly enough to get out of the ~4 psi peak overpressure blast zone (needed to overturn them, provided the blast hits them side-on and not head-on), during the time American Minuteman or Trident missiles are in flight to targets located well inland in Russian territory, e.g. Siberia. Hence, we have lost all deterrence, even if they all get dementia and decide NOT to launch-on-warning in an intense East-West crisis! Duh. Duh. Duh! We'll discuss this in more detail later. EM-1 contains a mathematical model allowing detailed calculations of blast wind pressure induced overturning of mobile missile launchers based on their size and mass, but as we've just pointed out, they can reduce vulnerability simply by moving off when a USA launch is detected, and then turning to face their previous position, and extending their stabiliser/outrigger foot pads. "Simples!", as the Meerkats say in UK TV ads. We have no credible deterrent whatever. We'll discuss this problem of mobile Russian ICBM and tactical nuclear warhead launchers later in more detail in this post (below).

*ABOVE:* weapon type 13 in this table of neutron and gammas output spectra from various warheads (the table shows only 4 types out of 13 in EM-1) shows precisely the output from the W79 enhanced-neutron capable tactical deterrent, the only thing we ever had to counter 2000+ Russian neutron bombs. One little snag: we don't have ANY W79's. They were flushed down the pan along with Ukraine's nuclear deterrent. Second little snag: the LOWEST neutron output weapon is type 10 in EM-1 and is conveniently not included in Northrop's summary table above!

Guess what the hell the type 10 is? Yup. You guessed right: the primary-only ("tactical") option

on the B61's dial-a-yield. *The W79 or "type 13" neutron bomb air burst at 500 m altitude gives a dose at ground zero of 170,000 rads of neutrons plus 27,200 rads of secondary gamma rays, according to EM-1. At the other end of the scale, the lowest neutron dose, just 0.666 rads, is produced by the type 10 in EM-1, the low-yield fission primary stage "dial a yield" option of a B61 thick-cased thermonuclear weapon having multiple yield options.* This is because the casing on a weapon with high yield options absorbs most of the neutrons from the primary stage, and thereby shows that you cannot simply use the low-yield option on a B61 as a replacement for tactical nuclear weapons like neutron bombs. USA nuclear warhead designers have lied to the public and the president about this to make the West vulnerable to Russian coercion, *an infiltration by traitors which makes the Wen Ho Lee "scandal" about data leaked to China look like a storm in a teacup* (the USA has declassified some B61 design detail, shown later below).

***"William J. Broad: Ukraine gave up a giant nuclear arsenal 30 years ago. Today there are regrets. At the end of the Cold War, the third largest nuclear power on earth was not Britain, France or China. It was Ukraine. The Soviet collapse, a slow-motion downfall that culminated in December 1991, resulted in the newly independent Ukraine inheriting roughly 5,000 nuclear arms that Moscow had stationed on its soil. Underground silos on its military bases held long-range missiles that carried up to 10 thermonuclear warheads, each far stronger than the bomb that leveled Hiroshima. Only Russia and the United States had more weapons."***

***<https://kyivindependent.com/hot-topic/william-j-broad-ukraine-gave-up-a-giant-nuclear-arsenal-30-years-ago-today-there-are-regrets>***

*DISARMAMENT WARMONGERING RESULTS:* (1) Disarmament via agreement (ignoring for now the 30 September 1938 UK-Nazi signed peace pact, etc) was disproved by Putin when - despite being signed up to the Chemical Weapons disarmament conventions, he ILLEGALLY BROKE THE DISARMAMENT AGREEMENTS and used chemical weapons, not just sarin nerve agent to help Assad win in Syria, but the latest most lethal Russian agent, Novichok, in the UK in 2018 to murder Dawn Sturgess ([please see our blog post chronology at the time of the attack and analysis of Russian lying propaganda on disarmament, linked here](#)). *If he does that for Novichok, he can do it for tactical nuclear weapons!* In WWII nuclear weapons were even *made in secret from scratch* by a democracy which had never made a nuclear weapon and wasn't even sure if it was possible, and then used on a *nuclear unarmed* state during the war, despite the democracy in question not having stockpile containing a single nuclear weapon when the war started! *So this proves that 100% total disarmament can't stop a nuclear war!* Unbelievable fact, that, according to the simplistic, fake news and smug disarmament lies you read in the papers and see on fascist style SIPRI lying TV murderers of kids through disarmament to prevent the credible deterrence of war, isn't it? Thus, paper agreements with the entire class of lying thug dictatorships that use WMDs to win a war against you, are useless. Hoping Hitler would cover himself shame if he violated agreements wasn't a good military policy, but it was used by thugs who clearly wanted a war in the 1930s and were rewarded with peace prizes in consequence (Angell and Philip Noel-Baker were the worst of the lot; the latter was made a Lord and continued to splutter lies for disarmament in 1980 in the House of Lords with no opposition, as we'll expose later in this post). The counter-argument that signed up agreements are rarely broken between democracies is vacuous because as Weart proved in *Never At War* years ago, democracies don't fight one another. In other words, the only situation in which written laws stop wars or crimes is for lad-abiding people who don't start wars or commit crimes! The only situation where wars or crimes can occur is for despots and criminals, who break agreements and laws! So bits of paper are no substitute for credible deterrence of dictators. The whole basis for "arms control" and "disarmament" is as fake a Angell's faked *Great Illusion* "disprove" of arms-races to avoid wars, which led to precisely what he claimed to avoid. See Joad's 1939 *Why War* for how Angell used his "arms race" lie to counter Churchill's pre-WWI call for superiority to deter the Kaiser, and see President Kennedy's *Why England Slept* to see how Angell's arms-race lie was used by Grey to excuse his failure to deter WWI, and how disarmers used that arms race lie repeatedly throughout the 1920s and 1930s to set off WWII, by ensuring Britain avoided an arms race with the Nazis, by rearming slower than the Nazis to avoid giving Hitler any excuse to set off WWII - **by the way, this was 100% successful and Hitler didn't declare war on the UK first, it was the UK that finally had to declare war because appeasement allowed virtually bloodless invasions and cold-blooded genocide!**),

(2) unilateral nuclear disarmament for guaranteed peace! Wonderful idea. But Japan was in a nuclear unarmed position in August 1945, and it did not take a Hitler or a Putin or even a Republican to drop not one but two nuclear weapons on it. Democratic President Harry Truman didn't hesitate to "press the metaphorical button" against a country which lacked nuclear weapons, just as the USA presently lacks even a single credible, tactical enhanced radiation-capable W79 warhead (if Putin gets his way we find out what Hitler might have done with 2000+ tactical neutron bombs against a USA which now hates Kennedy's *Why England Slept*).

(3) HISTORY SHOWS THE ONLY COUNTRY TO HAVE BEEN ATTACKED WITH NUCLEAR WEAPONS (AUGUST 1945) DID N-O-T HAVE ANY NUCLEAR WEAPONS. **BEING NUCLEAR UNARMED DIDN'T SAVE IT FROM BEING NUKED.** Moreover, the pre-war stockpiles that disarmers concentrate on minimising are almost purely FOR DETERRENCE, as easily proved by dividing those pre-war (pre WWI and pre WWII) weapons stockpiles into the total munitions used in wars. In other words, the number of pre-war weapons you have has jack ---- relation to the number of weapons used in the war you fail to credibly deter! This COMPLETELY DISPROVES THE "ARMS RACE" CAUSES SLAUGHTER MYTHS OF WWI AND WWII! The weapons that flattened the wooden



houses (not concrete buildings in general, or air raid shelters in general) in Hiroshima and Nagasaki, and that burned the wooden medieval slums of Hamburg, *were made DURING THE WAR, not in the non-existent "arms race" prior to the war.* (Let that fact sink in for 24 hours before you read Glasstone or play with Nukemap, or head "history" written by Russian biased Marxists like A. J. P. Taylor and Adolf Hitler. Don't trust those Nazis, they're unreliable due to bias!)

(4) GLASSTONE/NUKEMAP IGNORE THE SINGLE MOST IMPORTANT USE/EFFECT OF NUCLEAR WEAPONS:

***DETERRENCE IS AN EFFECT OF NUCLEAR WEAPONS AND A USE OF NUCLEAR WEAPONS THAT YOU IGNORE AT YOUR PERIL***, AND AT THE PERIL OF UKRAINIAN KIDS, AND IN FUTURE, THE LIVES OF AMERICAN KIDS WHO YOU INSTRUCT NOT TO DUCK AND COVER AND NOT TO HAVE A DETERRENT THAT IS CREDIBLE! ***This is all Russian Cold War anti-Western civil defence lying! Russia was (and is) totally pro-civil defence just as it is and was always pro-nuclear; the anti-civil defence stuff and anti nuclear stuff from Russia and its comintern comrades in the Western Marx Media is a trick to undermine Western defence, enabling Russian superiority; unfortunately people like Hans Bethe and the entire Western "arms control and disarmament" organization fails to appreciate the con-trick and hypocrisy from Russia on this. As a result, the effects of nuclear weapons have been totally distorted by Glasstone / Nukemap propaganda on behalf of pseudo (fake news) "Arms Control" liars who are effectively fellow travellers of Putin's agents in the media: nuclear weapons in the Kennedy era were used to try to de-escalate crises, e.g. USA had a large nuclear superiority at the time of the October 1962 Cuban missiles crisis and in his 22 October 1962 television address to the American people, Kennedy was able to use that nuclear superiority to deter what the Marx media call nuclear "accidents" (deliberate carelessness or contrived attacks under the name of a "that was JUST a mistake - SORRRRRRREEEEY, now I've said sorry shut the ---- up about it or you'll start a REAL war, matey!")***. Guess what? "Arms Control" mass-murderers with kid's blood soaked hands who caused all the wars that should have been credibly deterred by USING TACTICAL NUCLEAR WEAPONS TO CREDIBLY DETER WAR, refuse to acknowledge, assess, or respect the true fact that Kennedy used nuclear superiority in 1962 and that parity and inferiority encouraged genocide by the Nazis! What newspaper or TV station in the corrupt West will publish this? None. They're all determined to soak their hands repeatedly in blood so they can report mass murders, not deter war (a newsroom "non-event: move along please, nothing to see here" that doesn't exactly "boost viewing figures or sell toilet paper").

#### **GLASSTONE'S EFFECTS OF NUCLEAR WEAPONS UNOBSTRUCTED TERRAIN DATA DEBUNKED FOR STRATEGIC COUNTERVALUE DETERRENCE**

***If the effects of nuclear weapons are so terribly extensive, why not simply reduce their yields from megatons to subkiloton yield like the W54 warhead? If fallout is such a problem, why not use air bursts and also put up with a reduction in overall yield to use a clean (non-oralloy loaded) secondary stage, like the 95% fusion Redwing-Navajo test of 1956? Such questions get to the heart of the groupthink political disarmament mythology on nuclear weapons. The reality is that there are serious problems in public appreciation of nuclear deterrence. The whole concept of deterrence is undermined by secrecy. Once your opponents have nuclear weapons, secrecy only serves to keep the populations of democracies ignorant of the facts. As with Edward Witten promoting superstring "theory" with the fake news claim "there are no alternatives to what we say" (and consequently such alternatives must be opposed and censored out by groupthink fake "peer" review), underhand methods are used by the self-enobling "disarmament" brigade to make false assertions about nuclear weapons, to undermine nuclear deterrence. Such "peace" media propaganda and "disarmament" lying was used by Hitler to generate appeasement which allowed WWII, and again in the Cold***

**War it was backed by the USSR via the Moscow based World Peace Council, which infiltrated disarmament organizations in the West with propaganda. The exaggeration of nuclear weapons effects by draconian propaganda for disarmament is now leading to a lack of credible deterrence of precisely the kind of invasions (Belgium 1914, Poland 1939) that triggered both world wars. In reality, if you disarm democracies sufficiently that Teller's deterrent criterion of "overwhelming superiority" is removed, you clearly invite a return of the world war. Perhaps the most absurd kind of exaggeration is the Glasstone/Nukemap application of free-field nuclear test data from deserts to modern concrete cities which absorb energy from blast, nuclear and thermal radiation quite efficiently. (All published here in 2006, and ignored.)**

If you're sick of reading rubbish on nuclear effects by authors who defend Russian aggression as a reaction against Western imperialism, and that the Ukraine war proves we must disarm now to prevent nuclear deterrence of WWII (some gung-ho military folk will endorse that, too, seeing some kind of fun to be had in the hell of a conventional WWII or more likely surrender and then an unelected "world government for peace" of the Brezhnev variety), then one really good, well informed nuclear weapons history (unlike the Hiroshima effects lies and propaganda about people with no feet running around in Hiroshima quoted uncritically by Mr Rhodes et al.), albeit subjected to a **hate rant by Carey Sublette ("Most of the text that is not Shelton's actual recollections or direct commentary is lifted verbatim from government reports")**, who also runs a site promoting lying ignorant crap about nuclear weapons designs and effects over unobstructed deserts being applicable to modern city targets and who falsely claimed it contained plagiarism (it doesn't, and the Nukemap guy also deleted a comment by me pointing out that Feynman does write about what he actually did at Los Alamos - e.g. running the implosion calculations on IBM mechanical card sorters - in one of his books, after the Nukemap guy had attacked Feynman for allegedly not being clear), is the **Shelton's Reflections of a Nuclear Weaponeer (very brief extract of under 5% of the book is linked here, just to give the flavour), particularly the 2nd edition of 1990 which has enlarged page litho printing (it's literally the size and mass of a good old fashioned Church Bible) and contains vital updates like color photos supplied by Agnew, and also in the last notes section, Lord Penney's endorsement of the 1st edition.** Shelton (October 4, 1924 - November 27, 2014) doesn't pander to the USSR, their spies, or radiation orthodoxy. He writes that by helping to credibly deter WWII, the bomb proved useful and we don't need to forget that. Not a message Putin and his friend thugs in Western "arms control and disarmament" seem to appreciate.

Also in living memory (but now practically entirely deleted from the mainstream pseudo-"history" of the appeasement, disarmament, collaborate-with-thugs-for-peace-not-nuclear-deterrence pseudo-"communists") is Andrei Sakharov's Memoirs (Knopf 1990), which details the gulag and psychiatric treatment provided by the CCCP for dissidents.

Sakharov was exiled with his wife to Gorky by Brezhnev for criticising the latter's decision to invade Afghanistan at the end of 1979. He was there relentlessly persecuted by the KGB and went on repeated hunger strikes for 7 years until Gorbachev released him. His statement of 27

January 1980 (Appendix B of his Memoirs, pp. 673-5):

"On January 22, I was detained on the street and taken by force to the USSR Procurator's office ... I was asked to return the medals and orders and certificates ... Rekunkov also informed me of the decision to banish me to the city of Gorky, which is closed to foreigners ... I was instructed to report three times a month to the police ... The authorities are completely isolating me from the outside world. The house

is surrounded 24 hours a day by police and the KGB, who keep away all visitors, including my friends. Telephone connections with Moscow and Leningrad are cut off. We have not even been able to call my wife's mother ... Even in prison, there is more possibility of communication with the outside world ... The worsening of the international situation was caused by the following actions of the USSR ... Supporting terrorist regimes ... Supporting the actions of quasi-governmental terrorists in Iran who have violated diplomatic immunity ... the invasion of Afghanistan ..."

(That time, we still had the W79 neutron bomb, the threat of tit-for-tat retaliation if Russia tried to escalate to win that war. Please listen to the **1951 Jackie Doll and his Pickled Peppers song** opposing Truman's decision to nuke CIVILIANS in Japan but NOT fascist troops in Korea. *General McArthur gave Truman his firm MIDDLE FINGER AND RESIGNED IN PROTEST, like the DECENT OLD SOLDIER HE WAS. Killing off Joe Stalin in 1951 instead of appeasement could have saved millions in Korea, Vietnam, Afghanistan, Iraq and now Ukraine - and note that the military casualty figures for the "Ukraine War" are BS, since they don't include all those elderly Europeans killed by the rising cost of heating fuel and food - due to the war cutting cheap oil and gas supplies. Millions are being slowly murdered by those fascist pseudo-communists; if they want TRUE COMMUNISM start by BEING TRUTHFUL and F=== OFF with the mass murdering wars, F=== OFF with the endless Orwellian doubletalk S=== PROPAGANDA, and F=== OFF killing the Jews to try to steal their money to fund DICTATORSHIPS OF EVIL disguised as socialist or communist utopias.*)

Nuclear disarmers murder millions in many unnecessary w...



One hour of American anti communist music



How to stop nuclear war.



ABOVE: Nigel Farage (who ran the Brexit Campaign in UK that got the UK out of the dictatorial EU which was desperately and "secretly" trying to start WW3 with Russia in order to create a Communist Dictatorial "Utopia" of anti-Individualism from the radioactive rubble in the aftermath) reinventing himself as Lord Halifax circa 1940, in demanding we ask Putin "what price peace?" I unfortunately



feel the need to respond to Mr Farage. **Farage, you correctly called for a new British Civil Defence Corps back in February 2014, complaining about Marxist PM Harold Wilson's decision to scrap it to curry favour with his Labour Party militant Marxists (who wanted WW3 and Russian annexation) in 1968**, so why are you NOT doing this now? Don't you know the facts on this blog? And why aren't you calling for NATO to expand and for tactical neutron bombs in every one, to deter, stop and prevent a repetition of the invasions in Europe that sparked each World War (invasion of Belgium by concentrated force in 1914, invasion of Poland by concentrated Russian and German force in 1939). Why are you calling for a repeat of the 30 September 1938 "peace deal" between Chamberlain and Hitler? Why? Are you that ignorant of the history of civil defence effectiveness, tactical nuclear war deterrence, and appeasement being used by dictatorships to inure their peoples in the need for aggressive actions that can only escalate into mass murder? **In an ideal world, Ukraine would secretly assassinate Putin; sadly this was attempted 42 times with Hitler and failed, so don't hold your breath.**

**"Ignorance and misinformation can handicap the progress of a city or a company, but they can, if allowed to prevail in foreign policy, handicap this country's security. In a world of complex and continuing problems, in a world full of frustrations and irritations, America's leadership must be guided by the lights of learning and reason - or else those who confuse rhetoric with reality and the plausible with the possible will gain the popular ascendancy with their seemingly swift and simple solutions to every world problem."**

**- President John F. Kennedy's ungiven speech to the Dallas Trade Mart on 22 November 1963.**

Update (19 January 2024): Jane Corbin of BBC TV is continuing to publish ill-informed nuclear weapons capabilities nonsense debunked here since 2006 (a summary of some key evidence is linked here), e.g. her 9pm 18 Jan 2024 CND biased propaganda showpiece Nuclear Armageddon: How Close Are We? <https://www.bbc.co.uk/iplayer/episode/m001vgq5/nuclear-armageddon-how-close-are-we> which claims - from the standpoint of 1980s Greenham Common anti-American CND propaganda - that the world would be safer without nuclear weapons, despite the 1914-18 and 1939-45 trifles that she doesn't even bother to mention, which were only ended with nuclear deterrence. Moreover, she doesn't mention the BBC's Feb 1927 WMD exaggerating broadcast by Noel-Baker which used the false claim that there is no defence against mass destruction by gas bombs to argue for UK disarmament, something that later won him a Nobel Peace Prize and helped ensure the UK had no deterrent against the Nazis until too late to set off WWII (Nobel peace prizes were also awarded to others for lying, too, for instance Norman Angell whose pre-WWI book *The Great Illusion* helped ensure Britain's 1914 Liberal party Cabinet procrastinated on deciding what to do if Belgium was invaded, and thus failed deter the Kaiser from triggering the First World War!). The whole basis of her show was to edit out any realism whatsoever regarding the topic which is the title of her programme! No surprise there, then. Los Alamos, Livermore and Sandia are currently designing the W93 nuclear warhead for SLBM's to replace the older W76 and W88, and what she should do next time is to address the key issue of what that design should be to deter dictators without risking escalation via collateral damage: "To enhance the flexibility and responsiveness of our nuclear forces as directed in the 2018 NPR, we will pursue two supplemental capabilities to existing U.S. nuclear forces: a low-yield SLBM warhead (W76-2) capability and a modern nuclear sea launched cruise missile (SLCM-N) to address regional deterrence challenges that have resulted from increasing Russian and Chinese nuclear capabilities. These supplemental capabilities are necessary to correct any misperception an adversary can escalate their way to victory, and ensure our ability to provide a strategic deterrent. Russia's increased reliance on non-treaty accountable strategic and theater nuclear weapons and evolving doctrine of limited first-use in a regional conflict, give evidence of the increased possibility of Russia's employment of nuclear weapons. ... The NNSA took efforts in 2019 to address a gap identified in the 2018 NPR by converting a small number of W76-1s into the W76-2 low-yield variant. ... In 2019, our weapon modernization programs saw a setback when reliability issues emerged with commercial off-the-shelf non-nuclear components intended for the W88 Alteration 370 program and the B61-12 LEP. ... Finally, another just-in-time program is the W80-4 LEP, which remains in synchronized development with the LRSO delivery system. ... The Nuclear Weapons Council has established a requirement for the W93 ... If deterrence fails, our combat-ready force is prepared now to deliver a decisive response anywhere on the globe ..." - Testimony of Commander Charles Richard, US Strategic Command, to the Senate Committee on Armed Services, 13 Feb 2020. This issue of how to use nuclear weapons safely to deter major provocations that escalate to horrific wars is surely the key issue humanity should be

concerned with, not the CND time-machine of returning to a non-nuclear 1914 or 1939! Corbin doesn't address it; she uses debunked old propaganda tactics to avoid the real issues and the key facts.

For example, Corbin quotes only half a sentence by Kennedy in his TV speech of 22 October 1962: "it shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western hemisphere as an attack by the Soviet Union on the United States", and omits the second half of the sentence, which concludes: "requiring a full retaliatory response upon the Soviet Union." Kennedy was clearly using US nuclear superiority in 1962 to deter Khrushchev from allowing the Castro regime to start any nuclear war with America! By chopping up Kennedy's sentence, Corbin juggles the true facts of history to meet the CND agenda of "disarm or be annihilated." Another trick is her decision to uncritically interview CND biased anti-civil defense fanatics like the man (Professor Freedman) who got Bill Massey of the Sunday Express to water down my article debunking pro-war CND type "anti-nuclear" propaganda lies on civil defense in 1995! Massey reported to me that Freedman claimed civil defense is no use against a H-bomb, which he claims is cheaper than dirt cheap shelters, exactly what Freedman wrote in his deceptive letter published in the 26 March 1980 Times newspaper: "for far less expenditure the enemy could make a mockery of all this by increasing the number of attacking weapons", which completely ignores the Russian dual-use concept of simply adding blast doors to metro tubes and underground car parks, etc. In any case, civil defense makes deterrence credible as even the most hard left wingers like Duncan Campbell acknowledged on page 5 of *War Plan UK* (Paladin Books, London, 1983): "Civil defence ... is a means, if need be, of putting that deterrence policy, for those who believe in it, into practical effect."

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NUKEGATE - Western tactical neutron bombs were disarmed after Russian propaganda lie. Russia now has over 2000... "Disarmament and arms control" charlatans, quacks, cranks, liars, mass murdering Russian affiliates, and evil genocidal Marxist media exposed for what it is, what it was in the 1930s when it enabled Hitler to murder tens of millions in war. Glasstone's and Dolan's 1977 Effects of Nuclear Weapons deceptions totally disproved. Professor Brian Martin, TRUTH TACTICS, 2021 (pp45-50): "In trying to learn from scientific publications, trust remains crucial. The role of trust is epitomised by Glasstone's book <i>The Effects of Atomic Weapons</i> . Glasstone was not the author; he was the editor. The book is a compilation of information based on the work of numerous contributors. For me, the question was, should I trust this information? Was there some reason why the editors or authors would present fraudulent information, be subject to conflicts of interest or otherwise be biased? ... if anything, the authors would presumably want to overestimate rather than underestimate the dangers ... Of special interest would be anyone who disagreed with the data, calculations or findings in Glasstone. But I couldn't find any criticisms. <i>The Effects of Nuclear Weapons</i> was treated as the definitive source, and other treatments were compatible with it. ... One potent influence is called confirmation bias, which is the tendency to look for information that supports current beliefs and dismiss or counter contrary information. The implication is that changing one's views can be difficult due to mental commitments. To this can be added various forms of bias, interpersonal influences such as wanting to maintain relationships, overconfidence in one's knowledge, desires to appear smart, not wanting to admit being mistaken, and career impacts of having particular beliefs. It is difficult to assess the role of these influences on yourself. "	◆ 07/13/15
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Glasstone's fake nuclear weapon data for unobstructed terrain debunked for cities! Realistic effects and credible nuclear weapon capabilities for deterring or stopping aggressive invasions and attacks which could escalate into major conventional or nuclear wars. Credible nuclear deterrence of invasions and conventional wars reduce the risk of large conventional and nuclear wars occurring through escalation of invasions such as the invasion of Belgium in 1914 and the invasion of Poland in 1939, of surprise attacks like those against France in 1940 and of Russia and Pearl Harbor in 1941, Afghanistan in 1979, Kuwait in 1990, or Crimea in 2014. **Contrary to irrational, pseudo-scientific propaganda, the number of nuclear weapons is smaller than the millions of conventional weapons used in large wars and the correct scaling shows that the overall effects are similar, not massively different as often claimed for political propaganda by enemies of peace. Furthermore, the greater time delay of effects from nuclear weapons over the damaged area increases the efficiency of cheap civil defence countermeasures, as compared to conventional weapons. We need credible effects of nuclear weapons for real world peace: peace through tested, proved and practical declassified deterrence and countermeasures against collateral damage. Credible deterrence through simple, effective protection against concentrated and dispersed invasions and aerial attacks. Discussions of the facts as opposed to inaccurate, misleading lies of the "disarm or be annihilated" political dogma variety. Hiroshima and Nagasaki anti-nuclear propaganda debunked by the hard facts. Walls not wars. Walls bring people together by stopping divisive terrorists. In conclusion, credible nuclear deterrence of conventional war offers a beautiful opportunity to create a peaceful world, free from fear peddling, ranting dictators. The only oppositions you will meet will come from authoritarian obsessed fear peddling myth makers. If they can't tell the truth and face the facts, why listen to them? Please see our post on the need to *deter not only direct threats from nuclear attacks but also conventional wars and invasions* that can *escalate* into nuclear wars (as proved by the use of nuclear weapons in WWII, for example, after they were developed during the war itself and did not trigger or provoke the war), linked [here](#), [here](#), [here](#), and [here](#), [here](#), [here](#), and the true scaling law equivalence between a few thousand nuclear weapons and the several million tons of small conventional weapons in a non-nuclear world war as proved by our post [summarising key points in Herman Kahn's much-abused call for credible deterrence, \*On Thermonuclear War\*](#), linked [here](#). Peace comes through tested, proved and practical declassified countermeasures against the effects of nuclear weapons, chemical weapons and conventional weapons. Credible deterrence to end invasions and wars comes through simple, effective protection against invasions like low yield tactical weapons and walls, and civil defence against collateral damage. Peace comes through discussions of the facts as opposed to inaccurate, misleading lies of the "disarm or be annihilated" political dogma variety, which are designed to exploit fear to close down criticisms of errors in mainstream orthodoxy. In particular, please see the [post linked here on EMP results from an actual Russian 300 kt test at 290 km altitude over unwarned civilian infrastructure in Kazakhstan on 22 October 1962](#), which caused no injuries or deaths whatsoever (contrary to all of Jeremy Corbyn and CND style lying propaganda that any use of nuclear weapons on civilians would automatically kill millions), but shut down the communications and power supply lines! This is not secret, but does not make newspaper headlines to debunk CND style dogmas on the alleged incredibility of nuclear deterrence.**

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**Hiroshima's air raid shelters were unoccupied because Japanese Army officers were having breakfast when B29s were detected far away, says Yoshie Oka, the operator of the Hiroshima air raid sirens on 6 August 1945...**

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**In a sample of 1,881 burns cases in Hiroshima, only 17 (or 0.9 percent) were due to ignited clothing and 15 (or 0.7%) were due to the firestorm flames...**

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**Dr Harold L. Brode's new book, Nuclear Weapons in ...**

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**800 war migrants drowned on 22 April by EU policy:...**

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**Photographed fireball shielding by cloud cover in ...**



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Nuclear weapons effects "firestorm" and "nuclear w...

•

Proved 97.5% survival in completely demolished houses ...

How to achieve peace through tested, proved and practical declassified countermeasures against the effects of nuclear weapons, chemical weapons and conventional weapons. Credible deterrence through simple, effective protection against invasions and collateral damage. Discussions of the facts as opposed to inaccurate, misleading lies of the "disarm or be annihilated" political dogma variety. Hiroshima and Nagasaki anti-nuclear propaganda debunked by the hard facts. Walls not wars. Walls bring people together by stopping attacks by "divide and rule" style divisive terrorists, contrary to simplistic Vatican propaganda.

"There has never been a war yet which, if the facts had been put calmly before the ordinary folk, could not have been prevented." - British Foreign Secretary Ernest Bevin, House of Commons Debate on Foreign Affairs, Hansard, 23 November 1945, column 786 (unfortunately secret Cabinet committees called "democracy" for propaganda purposes have not been quite so successful in preventing war). Protection is needed against collateral civilian damage and contamination in conventional, chemical and nuclear attack, with credible low yield clean nuclear deterrence against conventional warfare which, in reality (not science fiction) costs far more lives. Anti scientific media, who promulgate and exploit terrorism for profit, censor (1) vital, effective civil defense knowledge and (2) effective, safe, low yield air burst clean weapons like the Mk54 and W79 which deter conventional warfare and escalation, allowing arms negotiations from a position of strength. This helped end the Cold War in the 1980s. Opposing civil defense and nuclear weapons that really deter conventional war, is complacent and dangerous.

War and coercion dangers have not stemmed from those who openly attack mainstream mistakes, but from those who camouflage themselves as freedom fighters to ban such free criticism itself, by making the key facts seem taboo, without even a proper debate, let alone financing research into unfashionable alternatives. Research and education in non-mainstream alternatives is needed before an unprejudiced debate, to establish all the basic facts for a real debate. "Wisdom itself cannot flourish, nor even truth be determined, without the give and take of debate and criticism." – Robert Oppenheimer (quotation from the H-bomb TV debate hosted by Eleanor Roosevelt, 12 February 1950).

"Apologies for freedom? I can't handle this! ... Deal from strength or get crushed every time ... Freedom demands liberty everywhere. I'm thinking, you see, it's not so easy. But we have to stand up tall and answer freedom's call!" – Freedom Kids

CONVENTIONAL WARS HAVE KILLED TENS OF MILLIONS OF PEOPLE, NUCLEAR WEAPONS CAN RAPIDLY DETER THIS REAL THREAT TO PEACE WITH MINIMAL CASUALTIES. 'During the critical period 8-15 February [1968], the U.S. command realized [that conventional] bombing was not sufficiently effective. ... The air campaign dropped over 110,000 tons of bombs and napalm on the area around Khe Sanh during the 77-day siege ... the most heavily bombed target in the history of conventional warfare.' – W. C. Yengst, S. J. Lukasik, and M. A. Jensen, *Nuclear Weapons that went to War*, SAID report DSWA-TR-97-25, September 1998 (quoted in the 2015 book by the secret *Capabilities of Nuclear Weapons* editor, Dr Harold L. Brode, *Nuclear Weapons in the Cold War*, page 287). [British Nuclear Test Civil Defence Research](#)



Richard P. Feynman, 'This Unscientific Age', in *The Meaning of It All*, Penguin Books, London, 1998, pages 106-9:

'Now, I say if a man is absolutely honest and wants to protect the populace from the effects of radioactivity, which is what our scientific friends often say they are trying to do, then he should work on the biggest number, not on the smallest number, and he should try to point out that the [natural cosmic] radioactivity which is absorbed by living in the city of Denver is so much more serious [than the smaller doses from nuclear explosions] ... that all the people of Denver ought to move to lower altitudes.'

*"If a man reads or hears a criticism of anything in which he has an interest, watch ... if he shows concern with any question except 'is it true?' he thereby reveals that his own attitude is unscientific. Likewise if ... he judges an idea not on its merits but with reference to the author of it; if he criticizes it as 'heresy'; if he argues that authority must be right because it is authority ... The path of truth is paved with critical doubt, and lighted by the spirit of objective enquiry... the majority of people have resented what seems in retrospect to have been purely matter of fact ... nothing has aided the persistence of falsehood, and the evils resulting from it, more than the unwillingness of good people to admit the truth ... the tendency continues to be*

*shocked by natural comment, and to hold certain things too 'sacred' to think about. ... How rarely does one meet anyone whose first reaction to anything is to ask: 'is it true?' Yet, unless that is a man's natural reaction, it shows that truth is not uppermost in his mind, and unless it is, true progress is unlikely."*

- Sir Basil Henry Liddell Hart, *Why Don't We Learn from History?*, PEN Books, 1944; revised edition, Allen and Unwin, 1972.

*Civil defense countermeasures, to be taken seriously by the population, require the publication of solid facts with the scientific evidence to support those facts against political propaganda to the contrary. Secrecy over the effects of nuclear weapons tests does not hinder plutonium and missile production by rogue states, but it does hinder civil defense countermeasures, by permitting lying political propaganda to go unopposed (see linked post, here).*

Terrorists successfully prey on the vulnerable. The political spreading of lies concerning threats and the alleged 'impossibility' of all countermeasures, terrorizing the population in order to 'justify' supposedly pro-peace disarmament policies in the 1920s-1930s, resulted in the secret rearmament of fascist states which were terrorizing the Jews and others, eventually leading to World War II.

Political exaggerations about nuclear weapons effects today:

(1) encourage terrorist states and other groups to secretly invest in such weapons to use either for political intimidation or for future use against countries which have no countermeasures, and

(2) falsely dismiss, in the eyes of the media and the public, cheap relatively effective countermeasures like civil defense and ABM.

Therefore, doom-mongering media lies *make us vulnerable to the proliferation threat* today in two ways, just as they led to both world wars:

(1) Exaggerations of offensive technology and a down-playing of simple countermeasures such as trenches, encouraged belligerent states to start World War I in the false belief that modern technology implied overwhelming firepower which would terminate the war quickly on the basis of offensive preparedness: if the facts about simple trench countermeasures against shelling and machine guns during the American Civil War had been properly understood, it would have been recognised by Germany that a long war based on munitions production and logistics would be necessary, and war would have been seen to be likely to lead to German defeat against countries with larger overseas allies and colonies that could supply munitions and the other resources required to win a long war.

(2) Exaggerations of aerial bombardment technology after World War I led to disarmament 'supported by' false claims that it was impossible to have any defense against a perceived threat of instant annihilation from thousands of aircraft carrying gas and incendiary bombs, encouraging fascists to secretly rearm in order to successfully take advantage of the fear and vulnerability caused by this lying political disarmament propaganda.

Contrived dismissal of civil defense by Marxist "Cambridge Scientists Anti-War Group" bigots: (a) appeased war-mongering enemies, and (b) maximised war mortality rates. Idealism kills. Super effective, fully proof-tested, cheap civil defense makes nuclear deterrence credible to stop conventional war devastation by avoiding collateral damage, tit-for-tat retaliation and escalation.

Historically, it has been proved that having weapons is not enough to guarantee a reasonable measure of safety from terrorism and rogue states; countermeasures are also needed, both to make any deterrent credible and to negate or at least mitigate the effects of a terrorist attack. Some people who wear seatbelts die in car crashes; some people who are taken to hospital in ambulances, even in peace-time, die. Sometimes, lifebelts and lifeboats cannot save lives at sea. This lack of a 100% success rate in saving lives doesn't disprove the value of everyday precautions or of hospitals and medicine. Hospitals don't lull motorists into a false sense of security, causing them to drive faster and cause more accidents. Like-minded 'arguments' against ABM and civil defense are similarly vacuous.

‘As long as the threat from Iran persists, we will go forward with a missile system that is cost-effective and proven. If the Iranian threat is eliminated, we will have a stronger basis for security, and the driving force for missile-defense construction in Europe will be removed.’

- President Obama, Prague Castle, Czech Republic, 4 April 2009.

Before 9/11, Caspar Weinberger was quizzed by skeptical critics on the BBC News program *Talking Point*, Friday, May 4, 2001: *Caspar Weinberger quizzed on new US Star Wars ABM plans:*

‘The [ABM] treaty was in 1972 ... The theory ... supporting the ABM treaty [which prohibits ABM, thus making nations vulnerable to terrorism] ... that it will prevent an arms race ... is perfect nonsense because we have had an arms race all the time we have had the ABM treaty, and we have seen the greatest increase in proliferation of nuclear weapons that we have ever had. ... So the ABM treaty preventing an arms race is total nonsense. ...

‘You have to understand that without any defences whatever you are very vulnerable. It is like saying we don't like chemical warfare - we don't like gas attacks - so we are going to give up and promise not to have any defences ever against them and that of course would mean then we are perfectly safe. ...

‘The Patriot was not a failure in the Gulf War - the Patriot was one of the things which defeated the Scud and in effect helped us win the Gulf War. One or two of the shots went astray but that is true of every weapon system that has ever been invented. ...

‘The fact that a missile defence system wouldn't necessarily block a suitcase bomb is certainly not an argument for not proceeding with a missile defence when a missile that hits can wipe out hundreds of thousands of lives in a second. ...

‘The curious thing about it is that missile defence is not an offensive weapon system - missile defence cannot kill anybody. Missile defence can help preserve and protect your people and our allies, and the idea that you are somehow endangering people by having a defence strikes me almost as absurd as saying you endanger people by having a gas mask in a gas attack. ...

‘President Bush said that we were going ahead with the defensive system but we would make sure that nobody felt we had offensive intentions because we would accompany it by a unilateral reduction of our nuclear arsenal. It seems to me to be a rather clear statement that proceeding with the missile defence system would mean fewer arms of this kind.

‘You have had your arms race all the time that the ABM treaty was in effect and now you have an enormous accumulation and increase of nuclear weapons and that was your arms race promoted by the ABM treaty. Now if you abolish the ABM treaty you are not going to get another arms race - you have got the arms already there - and if you accompany the missile defence construction with the unilateral reduction of our own nuclear arsenal then it seems to me you are finally getting some kind of inducement to reduce these weapons.’

*Before the ABM system is in place, and afterwards if ABM fails to be 100% effective in an attack, or is bypassed by terrorists using a bomb in a suitcase or in a ship, civil defense is required and can be effective at saving lives:*

‘Paradoxically, the more damaging the effect, that is the farther out its lethality stretches, the more can be done about it, because in the last fall of its power it covers vast areas, where small mitigations will save very large numbers of people.’

- Peter Laurie, *Beneath the City Streets: A Private Inquiry into the Nuclear Preoccupations of Government*, Penguin, 1974.

‘The purpose of a book is to save people [the] time and effort of digging things out for themselves. ... we have tried to leave the reader with something tangible – what a certain number of calories, roentgens, etc., means in terms of an effect on the human being. ... we must think of the



people we are writing for.’

– Dr Samuel Glasstone, DSc, letter dated 1 February 1957 to Colonel Dent L. Lay, Chief, Weapons Effects Division, U.S. Armed Forces Special Weapons Project, Washington, D.C., pages 2 and 4, concerning the preparation of *The Effects of Nuclear Weapons*.

Glasstone and Dolan stated in *The Effects of Nuclear Weapons* (1977), Table 12.17 on page 546, that the median distance in Hiroshima for survival after 20 days was 0.12 miles for people in concrete buildings and 1.3 miles for people standing outdoors. Therefore the median distances for survival in modern city buildings and in the open differed by a factor of 11 for Hiroshima; the difference in areas was thus a factor of  $11^2$  or about 120. Hence, taking cover in modern city buildings reduces the casualty rates and the risks of being killed by a factor of 120 for Hiroshima conditions, contrary to popular media presented political propaganda that civil defence is hopeless. This would reduce 120,000 casualties to 1,000 casualties.

From Dr Glasstone's *Effects of Nuclear Weapons* (1962/64 ed., page 631): ‘At distances between 0.3 and 0.4 mile from ground zero in Hiroshima the average survival rate, for at least 20 days after the nuclear explosion, was less than 20 percent. Yet in two reinforced concrete office buildings, at these distances, almost 90 percent of the nearly 800 occupants survived more than 20 days, although some died later of radiation injury. Furthermore, of approximately 3,000 school students who were in the open and unshielded within a mile of ground zero at Hiroshima, about 90 percent were dead or missing after the explosion. But of nearly 5,000 students in the same zone who were shielded in one way or another, only 26 percent were fatalities. ... survival in Hiroshima was possible in buildings at such distances that the overpressure in the open was 15 to 20 pounds per square inch. ... it is evident ... that the area over which protection could be effective in saving lives is roughly eight to ten times as great as that in which the chances of survival are small.’

Lord Mayhew, House of Lords debate on Civil Defence (General Local Authority Functions) Regulations, Hansard, vol. 444, cc. 523-49, 1 November 1983: ‘... if there had been effective civil defence at Hiroshima probably thousands of lives would have been saved and much human suffering would have been avoided. There is no question about it. ...’

Since the 1977 update by Glasstone and Dolan, extensive new updates to EM-1 for a further revised edition of *The Effects of Nuclear Weapons* have not actually been published with unlimited public distribution, due to President Carter's 1979 executive order which transferred responsibility for civil defense from the jurisdiction of the U.S. Department of Defense's Defense Civil Preparedness Agency to the new agency (which is not an Agency of the U.S. Department of Defense, and is not concerned with the analysis of nuclear weapons test effects data), the Federal Emergency Management Agency. However, the February 1997 U.S. Department of Defense's Defense Special Weapons Agency 0602715H RDT&E Budget Item Justification Sheet (R-2 Exhibit) states that a revision of Glasstone and Dolan's unclassified *Effects of Nuclear Weapons* was budgeted for 1997-9:

“FY 1997 Plans: ... Provide text to update Glasstone's book, *The Effects of Nuclear Weapons*, the standard reference for nuclear weapons effects. ... Update the unclassified textbook entitled, *The Effects of Nuclear Weapons*. ... Continue revision of Glasstone's book, *The Effects of Nuclear Weapons*, the standard reference for nuclear weapons effects. ... FY1999 Plans ... Disseminate updated *The Effects of Nuclear Weapons*.”

The new publications are either classified or unclassified with limited distribution restrictions (e.g., Bridgman's *Introduction to the Physics of Nuclear Weapons Effects*, which includes several chapters on nuclear weapons design to enable initial radiation outputs to be calculated precisely)

which prevents up-to-date basic nuclear effects information to justify civil defense against the latest nuclear threats from being widely disseminated; the books are printed for use only by government agencies. The problem with this approach is that widespread public understanding of the best information for civil defense countermeasures is prevented.

**‘It is true that the Soviets have tested nuclear weapons of a yield higher than that which we thought necessary, but the 100-megaton bomb of which they spoke two years ago does not and will not change the balance of strategic power. The United States has chosen, deliberately, to concentrate on more mobile and more efficient weapons, with lower but entirely sufficient yield ...’ - President John F. Kennedy in his television broadcast to the American public, 26 July 1963.**

**‘During World War II many large cities in England, Germany, and Japan were subjected to terrific attacks by high-explosive and incendiary bombs. Yet, when proper steps had been taken for the protection of the civilian population and for the restoration of services after the bombing, there was little, if any, evidence of panic. It is the purpose of this book to state the facts concerning the atomic bomb, and to make an objective, scientific analysis of these facts. It is hoped that as a result, although it may not be feasible completely to allay fear, it will at least be possible to avoid panic.’**

**– Dr George Gamow (the big bang cosmologist), Dr Samuel Glasstone, DSc (Executive Editor of the book), and Professor Joseph O. Hirschfelder, *The Effects of Atomic Weapons*, Chapter 1, p. 1, Paragraph 1.3, U.S. Department of Defense, September 1950.**

**‘The consequences of a multiweapon nuclear attack would certainly be grave ... Nevertheless, recovery should be possible if plans exist and are carried out to restore social order and to mitigate the economic disruption.’**

**- Philip J. Dolan, editor of *Nuclear Weapons Employment* FM 101-31 (1963), *Capabilities of Nuclear Weapons* DNA-EM-1 (1972), and *The Effects of Nuclear Weapons* (1977), Stanford Research Institute, Appendix A of the U.S. National Council on Radiological protection (NCRP) symposium *The Control of Exposure to the Public of Ionising Radiation in the Event of Accident or Attack*, 1981.**

**‘Suppose the bomb dropped on Hiroshima had been 1,000 times as powerful ... It could not have killed 1,000 times as many people, but at most the entire population of Hiroshima ... [regarding the hype about various nuclear "overkill" exaggerations] there is enough water in the oceans to drown everyone ten times.’**

**- Professor Brian Martin, PhD (physics), ‘The global health effects of nuclear war’, *Current Affairs Bulletin*, Vol. 59, No. 7, December 1982, pp. 14-26.**

**In 1996, half a century after the nuclear detonations, data on cancers from the Hiroshima and Nagasaki survivors was published by D. A. Pierce et al. of the Radiation Effects Research Foundation, RERF (*Radiation Research* vol. 146 pp. 1-27; *Science* vol. 272, pp. 632-3) for 86,572 survivors, of**

whom 60% had received bomb doses of over 5 mSv (or 500 millirem in old units) suffering 4,741 cancers of which only 420 were due to radiation, consisting of 85 leukemias and 335 solid cancers.

‘Today we have a population of 2,383 [radium dial painter] cases for whom we have reliable body content measurements. . . . All 64 bone sarcoma [cancer] cases occurred in the 264 cases with more than 10 Gy [1,000 rads], while no sarcomas appeared in the 2,119 radium cases with less than 10 Gy.’

- Dr Robert Rowland, Director of the Center for Human Radiobiology, *Bone Sarcoma in Humans Induced by Radium: A Threshold Response?*, Proceedings of the 27th Annual Meeting, European Society for Radiation Biology, Radioprotection colloquies, Vol. 32C1 (1997), pp. 331-8.

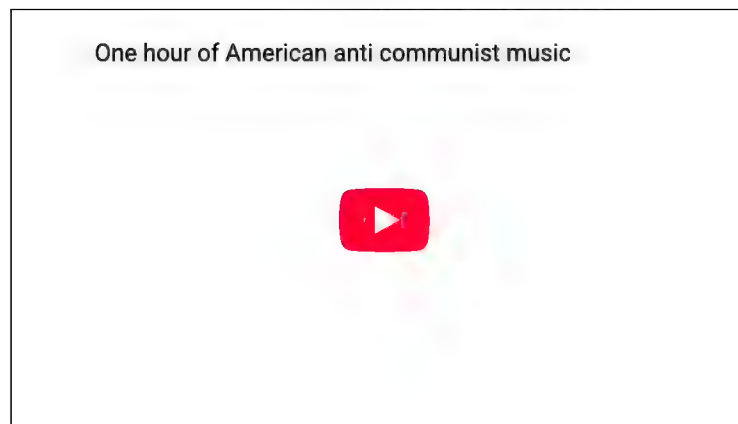
Zbigniew Jaworowski, 'Radiation Risk and Ethics: Health Hazards, Prevention Costs, and Radiophobia', *Physics Today*, April 2000, pp. 89-90:

‘... it is important to note that, given the effects of a few seconds of irradiation at Hiroshima and Nagasaki in 1945, a threshold near 200 mSv may be expected for leukemia and some solid tumors. [Sources: UNSCEAR, *Sources and Effects of Ionizing Radiation*, New York, 1994; W. F. Heidenreich, et al., *Radiat. Environ. Biophys.*, vol. 36 (1999), p. 205; and B. L. Cohen, *Radiat. Res.*, vol. 149 (1998), p. 525.] For a protracted lifetime natural exposure, a threshold may be set at a level of several thousand millisieverts for malignancies, of 10 grays for radium-226 in bones, and probably about 1.5-2.0 Gy for lung cancer after x-ray and gamma irradiation. [Sources: G. Jaikrishan, et al., *Radiation Research*, vol. 152 (1999), p. S149 (for natural exposure); R. D. Evans, *Health Physics*, vol. 27 (1974), p. 497 (for radium-226); H. H. Rossi and M. Zaider, *Radiat. Environ. Biophys.*, vol. 36 (1997), p. 85 (for radiogenic lung cancer).] The hormetic effects, such as a decreased cancer incidence at low doses and increased longevity, may be used as a guide for estimating practical thresholds and for setting standards. ...

‘Though about a hundred of the million daily spontaneous DNA damages per cell remain unrepaired or misrepaired, apoptosis, differentiation, necrosis, cell cycle regulation, intercellular interactions, and the immune system remove about 99% of the altered cells. [Source: R. D. Stewart, *Radiation Research*, vol. 152 (1999), p. 101.] ...

‘[Due to the Chernobyl nuclear accident in 1986] as of 1998 (according to UNSCEAR), a total of 1,791 thyroid cancers in children had been registered. About 93% of the youngsters have a prospect of full recovery. [Source: C. R. Moir and R. L. Telander, *Seminars in Pediatric Surgery*, vol. 3 (1994), p. 182.] ... The highest average thyroid doses in children (177 mGy) were accumulated in the Gomel region of Belarus. The highest incidence of thyroid cancer (17.9 cases per 100,000 children) occurred there in 1995, which means that the rate had increased by a factor of about 25 since 1987.

‘This rate increase was probably a result of improved screening [not radiation!]. Even then, the incidence rate for occult thyroid cancers was still a thousand times lower than it was for occult thyroid cancers in nonexposed populations (in the US, for example, the rate is 13,000 per 100,000 persons, and in Finland it is 35,600 per 100,000 persons). Thus, given the prospect of improved diagnostics, there is an enormous potential for detecting yet more [fictitious] "excess" thyroid cancers. In a study in the US that was performed during the period of active screening in 1974-79, it was determined that the incidence rate of malignant and other thyroid nodules was greater by 21-fold than it had been in the pre-1974 period. [Source: Z. Jaworowski, *21st Century Science and Technology*, vol. 11 (1998), issue 1, p. 14.]’



‘Professor [Edward Lewis](#) used data from four independent populations exposed to radiation to demonstrate that the incidence of leukemia was linearly related to the accumulated dose of radiation. ... Outspoken scientists, including Linus Pauling, used [Lewis](#)’s risk estimate to inform the public about the danger of nuclear fallout by estimating the number of leukemia deaths that would be caused by the test detonations. In May of 1957 [Lewis](#)’s analysis of the radiation-induced human leukemia data was published as a lead article in *Science* magazine. In June he presented it before the Joint Committee on Atomic Energy of the US Congress.’ – Abstract of thesis by Jennifer Caron, *Edward Lewis and Radioactive Fallout: the Impact of Caltech Biologists Over Nuclear Weapons Testing in the 1950s and 60s*, Caltech, January 2003.

Dr John F. Loutit of the Medical Research Council, Harwell, England, in 1962 wrote a book called *Irradiation of Mice and Men* (University of Chicago Press, Chicago and London), discrediting the pseudo-science from geneticist [Edward Lewis](#) on pages 61, and 78-79:

‘... Mole [R. H. Mole, *Brit. J. Radiol.*, v32, p497, 1959] gave different groups of mice an integrated total of 1,000 r of X-rays over a period of 4 weeks. But the dose-rate - and therefore the radiation-free time between fractions - was varied from 81 r/hour intermittently to 1.3 r/hour continuously. The incidence of leukemia varied from 40 per cent (within 15 months of the start of irradiation) in the first group to 5 per cent in the last compared with 2 per cent incidence in irradiated controls. ...

‘What [Lewis](#) did, and which I have not copied, was to include in his table another group - spontaneous incidence of leukemia (Brooklyn, N.Y.) - who are taken to have received only natural background radiation throughout life at the very low dose-rate of 0.1-0.2 rad per year: the best estimate is listed as  $2 \times 10^{-6}$  like the others in the table. But the value of  $2 \times 10^{-6}$  was not calculated from the data as for the other groups; it was merely adopted. By its adoption and multiplication with the average age in years of Brooklynners - 33.7 years and radiation dose per year of 0.1-0.2 rad - a mortality rate of 7 to 13 cases per million per year due to background radiation was deduced, or some 10-20 per cent of the observed rate of 65 cases per million per year. ...

‘All these points are very much against the basic hypothesis of [Lewis](#) of a linear relation of dose to leukemic effect irrespective of time. Unhappily it is not possible to claim for [Lewis](#)’s work as others have done, “It is now possible to calculate - within narrow limits - how many deaths from leukemia will result in any population from an increase in fall-out or other source of radiation” [Leading article in *Science*, vol. 125, p. 963, 1957]. This is just wishful journalese.

‘The burning questions to me are not what are the numbers of leukemia to be expected from atom bombs or radiotherapy, but what is to be expected from natural background .... Furthermore, to obtain estimates of these, I believe it is wrong to go to [1950s inaccurate, dose rate effect ignoring, data from] atom bombs, where the radiations are qualitatively different [i.e., including effects from neutrons] and, more important, the dose-rate outstandingly different.’



Samuel Glasstone and Philip J. Dolan, *The Effects of Nuclear Weapons*, 3rd ed., 1977, pp. 611-3:

‘From the earlier studies of radiation-induced mutations, made with fruitflies [by Nobel Laureate Hermann J. Muller and other geneticists who worked on plants, who falsely hyped their insect and plant data as valid for mammals like humans during the June 1957 U.S. Congressional Hearings on fallout effects], it appeared that the number (or frequency) of mutations in a given population ... is proportional to the total dose ... More recent experiments with mice, however, have shown that these conclusions need to be revised, at least for mammals. [*Mammals are biologically closer to humans, in respect to DNA repair mechanisms, than short-lived insects whose life cycles are too small to have forced the evolutionary development of advanced DNA repair mechanisms, unlike mammals that need to survive for decades before reproducing.*] When exposed to X-rays or gamma rays, the mutation frequency in these animals has been found to be dependent on the exposure (or dose) rate ...

‘At an exposure rate of 0.009 roentgen per minute [0.54 R/hour], the total mutation frequency in female mice is indistinguishable from the spontaneous frequency. [Emphasis added.] *There thus seems to be an exposure-rate threshold below which radiation-induced mutations are absent* ... with adult female mice ... a delay of at least seven weeks between exposure to a substantial dose of radiation, either neutrons or gamma rays, and conception causes the mutation frequency in the offspring to drop almost to zero. ... *recovery* in the female members of the population would bring about a substantial reduction in the ‘load’ of mutations in subsequent generations.’

George Bernard Shaw cynically explains groupthink brainwashing bias:

‘We cannot help it because we are so constituted that we always believe finally what we wish to believe. The moment we want to believe something, we suddenly see all the arguments for it and become blind to the arguments against it. The moment we want to disbelieve anything we have previously believed, we suddenly discover not only that there is a mass of evidence against, but that this evidence was staring us in the face all the time.’

From the essay titled ‘What is Science?’ by Professor Richard P. Feynman, presented at the fifteenth annual meeting of the National Science Teachers Association, 1966 in New York City, and published in *The Physics Teacher*, vol. 7, issue 6, 1968, pp. 313-20:

‘... great religions are dissipated by following form without remembering the direct content of the teaching of the great leaders. In the same way, it is possible to follow form and call it science, but that is pseudo-science. In this way, we all suffer from the kind of tyranny we have today in the many institutions that have come under the influence of pseudoscientific advisers.

‘We have many studies in teaching, for example, in which people make observations, make lists, do statistics, and so on, but these do not thereby become established science, established knowledge. They are merely an imitative form of science analogous to the South Sea Islanders’ airfields - radio towers, etc., made out of wood. The islanders expect a great airplane to arrive. They even build wooden airplanes of the same shape as they see in the foreigners’ airfields around them, but strangely enough, their wood planes do not fly. The result of this pseudoscientific imitation is to produce experts, which many of you are. ... you teachers, who are really teaching children at the bottom of the heap, can maybe doubt the experts. As a matter of fact, I can also define science another way: Science is the belief in the ignorance of experts.’

Richard P. Feynman, ‘This Unscientific Age’, in *The Meaning of It All*, Penguin Books, London, 1998, pages 106-9:

‘Now, I say if a man is absolutely honest and wants to protect the populace from the effects of radioactivity, which is what our scientific friends often say they are trying to do, then he should work on the biggest number, not on the smallest number, and he should try to point out that the [natural cosmic] radioactivity which is absorbed by living in the city of Denver is so much more serious [than the smaller doses from nuclear explosions] ... that all the people of Denver ought to move to lower altitudes.’

Feynman is *not* making a point about low level radiation effects, but about the politics of ignoring the massive natural background radiation dose, while provoking hysteria over much smaller measured fallout pollution radiation doses. Why is the anti-nuclear lobby so concerned about banning nuclear energy - which is not possible even in principle since most of our nuclear radiation is from the sun and from supernova debris contaminating the Earth from the explosion that created the solar system circa 4,540 million years ago - when they could cause much bigger radiation dose reductions to the population by concentrating on the bigger radiation source, natural background radiation. It is possible to shield natural background radiation by the air, e.g. by moving the population of high altitude cities to lower altitudes where there is more air between the people and outer space, or banning the use of high-altitude jet aircraft. The anti-nuclear lobby, as Feynman stated back in the 1960s, didn't crusade to reduce the bigger dose from background radiation. Instead they chose to argue against the *much smaller* doses from fallout pollution. Feynman's argument is still today falsely interpreted as a political statement, when it is actually exposing pseudo-science and countering political propaganda. It is still ignored by the media. It has been pointed out by Senator Hickenlooper on page 1060 of the May-June 1957 U.S. Congressional Hearings before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, *The Nature of Radioactive Fallout and Its Effects on Man*:

'I presume all of us would earnestly hope that we never had to test atomic weapons ... but by the same token I presume that we want to save thousands of lives in this country every year and we could just abolish the manufacture of [road accident causing] automobiles ...'

Dihydrogen monoxide is a potentially very dangerous chemical containing hydrogen and oxygen which has caused numerous severe burns by scalding and deaths by drowning, contributes to the greenhouse effect, accelerates corrosion and rusting of many metals, and contributes to the erosion of our natural landscape: 'Dihydrogen monoxide (DHMO) is colorless, odorless, tasteless, and kills uncounted thousands of people every year. Most of these deaths are caused by accidental inhalation of DHMO, but the dangers of dihydrogen monoxide do not end there. Prolonged exposure to its solid form causes severe tissue damage. Symptoms of DHMO ingestion can include excessive sweating and urination, and possibly a bloated feeling, nausea, vomiting and body electrolyte imbalance. For those who have become dependent, DHMO withdrawal means certain death.'

From the site for the petition against dihydrogen monoxide: [Please sign this petition and help stop This Invisible Killer. Get the government to do something now. ... Contamination Is Reaching Epidemic Proportions! Quantities of dihydrogen monoxide have been found in almost every stream, lake, and reservoir in America today. But the pollution is global, and the contaminant has even been found in Antarctic ice. DHMO has caused millions of dollars of property damage in the Midwest, and recently California.](#)

A recent example of the pseudoscientific radiation 'education' masquerading as science that Feynman (quoted above) objected to in the 1960s was published in 2009 in an article called 'The proportion of childhood leukaemia incidence in Great Britain that may be caused by natural background ionizing radiation' in *Leukemia*, vol. 23 (2009), pp. 770-776, which falsely asserts - in contradiction to the evidence that the no-threshold model is *contrary* to Hiroshima and Nagasaki data: 'Risk models based primarily on studies of the Japanese atomic bomb survivors imply that low-level exposure to ionizing radiation, including ubiquitous natural background radiation, also raises the risk of childhood leukaemia. Using two sets of recently published leukaemia risk models and estimates of natural background radiation red-bone-marrow doses received by children, about 20% of the cases of childhood leukaemia in Great Britain are predicted to be attributable to this source.' The authors of this pseudoscience which is the opposite of the facts are R. Wakeford (Dalton Nuclear Institute, University of Manchester, Manchester, UK), G. M. Kendall (Childhood Cancer Research Group, Oxford, UK), and M. P. Little (Department of Epidemiology and Public Health, Imperial College, London, UK). It is disgusting and sinful that the facts about childhood leukemia are being lied on so blatantly for non-scientific purposes, and it is to be hoped that these leukemia investigators will either correct their errors or alternatively be banned from using scientific literature to promote false dogma for deception until they mend the error of their ways and repent their sins in this matter.

Protein P53, discovered only in 1979, is encoded by gene TP53, which occurs on human chromosome 17. P53 also occurs in other mammals including mice, rats and dogs. P53 is one of the proteins which continually repairs breaks in DNA, which easily breaks at body temperature: the DNA in each cell of the human body suffers at least two single strand breaks every second, and one double strand (i.e. complete double helix) DNA break occurs at least once every 2 hours (5% of radiation-induced DNA breaks are double strand breaks, while 0.007% of spontaneous DNA breaks at body temperature are double strand breaks)! Cancer occurs when several breaks in DNA happen to occur by chance at nearly the same time, giving several loose strand ends at once, which repair proteins like P53 then repair incorrectly, causing a mutation which can be proliferated somatically. This cannot occur when only one break occurs, because only two loose ends are produced, and P53 will reattach them correctly. But if low-LET ionising radiation levels are increased to a certain extent, causing more single strand breaks, P53 works faster and is able deal with faster breaks as they occur, so that multiple broken strand ends do not arise. This prevents DNA strands being repaired incorrectly, and prevents cancer - a result of mutation caused by faults in DNA - from arising. Too much radiation of course overloads the P53 repair mechanism, and then it cannot repair breaks as they occur, so multiple breaks begin to appear and loose ends of DNA are wrongly connected by P53, causing an increased cancer risk.

1. DNA-damaging free radicals are equivalent to a source of sparks which is always present naturally.
2. Cancer is equivalent the fire you get if the sparks are allowed to ignite the gasoline, i.e. if the free radicals are allowed to damage DNA without the damage being repaired.
3. Protein P53 is equivalent to a fire suppression system which is constantly damping out the sparks, or repairing the damaged DNA so that cancer doesn't occur.

In this way of thinking, the 'cause' of cancer will be down to a failure of a DNA repairing enzyme like protein P53 to repair the damage.

Dr Jane Orient, 'Homeland Security for Physicians', *Journal of American Physicians and Surgeons*, vol. 11, number 3, Fall 2006, pp. 75-9:

'In the 1960s, a group of activist physicians called Physicians for Social Responsibility (PSR) undertook to "educate the medical profession and the world about the dangers of nuclear weapons," beginning with a series of articles in the *New England Journal of Medicine*. [Note that journal was publishing information for anti-civil defense propaganda back in 1949, e.g. the article in volume 241, pp. 647-53 of *New England Journal of Medicine* which falsely suggests that civil defense in nuclear war would be hopeless because a single burned patient in 1947 with 40% body area burns required 42 oxygen tanks, 36 pints of plasma, 40 pints of whole blood, 104 pints of fluids, 4,300 m of gauze, 3 nurses and 2 doctors. First, only unclothed persons in direct line of sight without shadowing can get 40% body area burns from thermal radiation, second, duck and cover offers protection in a nuclear attack warning, and G. V. LeRoy had already published, two years earlier, in *J.A.M.A.*, volume 134, 1947, pp. 1143-8, that less than 5% of burns in Hiroshima and Nagasaki were caused by building and debris fires. In medicine it is always possible to expend vast resources on patients who are fatally injured. In a mass casualty situation, doctors should not give up just because they don't have unlimited resources; as at Hiroshima and Nagasaki, they would need to do their best with what they have.] On its website, [www.psr.org](http://www.psr.org), the group boasts that it "led the campaign to end atmospheric nuclear testing." With this campaign, the linear no-threshold (LNT) theory of radiation carcinogenesis became entrenched. It enabled activists to calculate enormous numbers of potential casualties by taking a tiny risk and multiplying it by the population of the earth. As an enduring consequence, the perceived risks of radiation are far out of proportion to actual risks, causing tremendous damage to the American nuclear industry. ... Efforts to save lives were not only futile, but unethical: Any suggestion that nuclear war could be survivable increased its likelihood and was thus tantamount to warmongering, PSR spokesmen warned. ...

'For the mindset that engendered and enables this situation, which jeopardizes the existence of the United States as a nation as well as the lives of millions of its citizens, some American physicians and certain prestigious medical organizations bear a heavy responsibility.



'Ethical physicians should stand ready to help patients to the best of their ability, and not advocate sacrificing them in the name of a political agenda. Even very basic knowledge, especially combined with simple, inexpensive advance preparations, could save countless lives.'

Dr Theodore B. Taylor, *Proceedings of the Second Interdisciplinary Conference on Selected Effects of a General War*, DASIAC Special Report 95, July 1969, vol. 2, DASA-2019-2, AD0696959, page 298 (also linked here):

'I must just say that as far as I'm concerned I have had some doubts about whether we should have had a civil defense program in the past. I have no doubt whatsoever now, for this reason, that I've seen ways in which the deterrent forces can fail to hold things off, so that no matter what our national leaders do, criminal organizations, what have you, groups of people over which we have no control whatsoever, can threaten other groups of people.'

This point of Taylor is the key fact on the morality. Suppose we disarm and abandon nuclear power. That won't stop fallout from a war, terrorists, or a foreign reactor blast from coming. Civil defence knowledge is needed. Even when America has ABM, it will be vulnerable to wind carried fallout. No quantity of pacifist hot air will protect people against radiation.

Charles J. Hitch and Roland B. McKean of the RAND Corporation in their 1960 book *The Economics of Defense in the Nuclear Age*, Harvard University Press, Massachusetts, pp. 310-57:

'With each side possessing only a small striking force, a small amount of cheating would give one side dominance over the other, and the incentive to cheat and prepare a preventative attack would be strong ... With each side possessing, say, several thousand missiles, a vast amount of cheating would be necessary to give one side the ability to wipe out the other's striking capability. ... the more extensive a disarmament agreement is, the smaller the force that a violator would have to hide in order to achieve complete domination. Most obviously, "the abolition of the weapons necessary in a general or 'unlimited' war" would offer the most insuperable obstacles to an inspection plan, since the violator could gain an overwhelming advantage from the concealment of even a few weapons.'

Disarmament after World War I caused the following problem which led to World War II (reported by Winston S. Churchill in the London Daily Express newspaper of November 1, 1934):

'Germany is arming secretly, illegally and rapidly. A reign of terror exists in Germany to keep secret the feverish and terrible preparations they are making.'

British Prime Minister Thatcher's address to the United Nations General Assembly on disarmament on 23 June 1982, where she pointed out that in the years since the nuclear attacks on Hiroshima and Nagasaki, 10 million people had been killed by 140 non-nuclear conflicts:

'The fundamental risk to peace is not the existence of weapons of particular types. It is the disposition on the part of some states to impose change on others by resorting to force against other nations ... Aggressors do not start wars because an adversary has built up his own strength. They start wars because they believe they can gain more by going to war than by remaining at peace.'

J. D. Culshaw, the then Director of the U.K. Home Office Scientific Advisory Branch, stated in his article in the Scientific Advisory Branch journal *Fission Fragments*, September 1972 (issue No. 19), classified 'Restricted':

'Apart from those who don't want to know or can't be bothered, there seem to be three major schools of thought about the nature of a possible Third World War ...

\* 'The first group think of something like World War II but a little worse ...

\* '... the second of World War II but very much worse ...

\* 'and the third group think in terms of a catastrophe ...

'When the Armageddon concept is in favour, the suggestion that such problems exist leads to "way out" research on these phenomena, and it is sufficient to mention a new catastrophic threat [e.g., 10 years later this was done by Sagan with "nuclear winter" hype, which turned out to be fake because modern concrete cities can't produce firestorms like 1940s wooden-built areas of Hamburg, Dresden and Hiroshima] to stimulate research into the possibilities of it arising. The underlying appeal of this concept is that if one could show that the execution of all out nuclear, biological or chemical warfare would precipitate the end of the world, no one but a mad man would be prepared to initiate such a war. [However, as history proves, plenty of mad men end up gaining power and leading countries into wars.]'

J. K. S. Clayton, then Director of the U.K. Home Office Scientific Advisory Branch, stated in his introduction, entitled *The Challenge - Why Home Defence?*, to the 1977 Home Office Scientific Advisory Branch *Training Manual for Scientific Advisers*:

'Since 1945 we have had nine wars - in Korea, Malaysia and Vietnam, between China and India, China and Russia, India and Pakistan and between the Arabs and Israelis on three occasions. We have had confrontations between East and West over Berlin, Formosa and Cuba. There have been civil wars or rebellions in no less than eleven countries and invasions or threatened invasions of another five. Whilst it is not suggested that all these incidents could have resulted in major wars, they do indicate the aptitude of mankind to resort to a forceful solution of its problems, sometimes with success. ...'

It is estimated that Mongol invaders exterminated 35 million Chinese between 1311-40, without modern weapons. Communist Chinese killed 26.3 million dissenters between 1949 and May 1965, according to detailed data compiled by the Russians on 7 April 1969. The Soviet communist dictatorship killed 40 million dissenters, mainly owners of small farms, between 1917-59. Conventional (non-nuclear) air raids on Japan killed 600,000 during World War II. The single incendiary air raid on Tokyo on 10 March 1945 killed 140,000 people (more than the total for nuclear bombs on Hiroshima and Nagasaki combined) at much less than the \$2 billion expense of the Hiroshima and Nagasaki nuclear bombs! Non-nuclear air raids on Germany during World War II killed 593,000 civilians. The argument that the enemy will continue stocking megaton fallout weapons if we go to cleaner weapons is irrelevant for deterrence, since we're not planning to start war, just to credibly deter invasions. You should not try to lower your standards of warfare to those of your enemy to appease groupthink taboos, or you will end up like Britain's leaders in the 1930s, trying to collaborate with fascists for popular applause.

House of Lords debate *Nuclear Weapons: Destructive Power*, published in Hansard, 14 June 1988:

Lord Hailsham of Saint Marylebone: 'My Lords, if we are going into the question of lethality of weapons and seek thereby to isolate the nuclear as distinct from the so-called conventional range, is there not a danger that the public may think that Vimy, Passchendaele and Dresden were all right —sort of tea parties— and that nuclear war is something which in itself is unacceptable?'

Lord Trefgarne: 'My Lords, the policy of making Europe, or the rest of the world, safe for conventional war is not one that I support.'

House of Commons debate *Civil Defence* published in Hansard, 26 October 1983:

Mr. Bill Walker (Tayside, North): 'I remind the House that more people died at Stalingrad than at Hiroshima or Nagasaki. Yet people talk about fighting a conventional war in Europe as if it were acceptable. One rarely sees demonstrations by the so-called peace movement against a conventional war in Europe, but it could be nothing but ghastly and horrendous. The casualties would certainly exceed those at Stalingrad, and that cannot be acceptable to anyone who wants peace'

On 29 October 1982, Thatcher stated of the Berlin Wall: 'In every decade since the war the Soviet leaders have been reminded that their pitiless ideology only survives because it is maintained by force. But the day comes when the anger and frustration of the people is so great that force cannot contain it. Then the edifice cracks: the mortar crumbles ... one day, liberty will dawn on the other side of the wall.'

On 22 November 1990, she said: 'Today, we have a Europe ... where the threat to our security from the overwhelming conventional forces of the Warsaw Pact has been removed; where the Berlin Wall has been torn down and the Cold War is at an end. These immense changes did not come about by chance. They have been achieved by strength and resolution in defence, and by a refusal ever to be intimidated.'

'The case for civil defence stands regardless of whether a nuclear deterrent is necessary or not. ... Even if the U.K. were not itself at war, we would be as powerless to prevent fallout from a nuclear explosion crossing the sea as was King Canute to stop the tide.' - U.K. Home Office leaflet, *Civil Defence*, 1982.

'... peace cannot be guaranteed absolutely. Nobody can be certain, no matter what policies this or any other Government were to adopt, that the United Kingdom would never again be attacked. Also we cannot tell what form such an attack might take. Current strategic thinking suggests that if war were to break out it would start with a period of conventional hostilities of uncertain duration which might or might not escalate to nuclear conflict. ... while nuclear weapons exist there must always be a chance, however small, that they will be used against us [like gas bombs in World War II]. ... as a consequence of war between other nations in which we were not involved fall out from nuclear explosions could fall on a neutral Britain. ... conventional war is not the soft option that is sometimes suggested. It is also too easily forgotten that in World War II some 50 million people died and that conventional weapons have gone on killing people ever since 1945 without respite.' - - [The Minister of State, Scottish Office \(Lord Gray of Contin\), House of Lords debate on Civil Defence \(General Local Authority Functions\) Regulations, Hansard, vol. 444, cc. 523-49, 1 November 1983.](#)

'All of us are living in the light and warmth of a huge hydrogen bomb, 860,000 miles across and 93 million miles away, which is in a state of continuous explosion.' - Dr Isaac Asimov.

'Dr Edward Teller remarked recently that the origin of the earth was somewhat like the explosion of the atomic bomb...' Dr Harold C. Urey, *The Planets: Their Origin and Development*, Yale University Press, New Haven, 1952, p. ix.

'But compared with a supernova a hydrogen bomb is the merest trifle. For a supernova is equal in violence to about a million million million million hydrogen bombs all going off at the same time.' - Sir Fred Hoyle (1915-2001), *The Nature of the Universe*, Pelican Books, London, 1963, p. 75.

'In fact, physicists find plenty of interesting and novel physics in the environment of a nuclear explosion. Some of the physical phenomena are valuable objects of research, and promise to provide further understanding of nature.' - Dr Harold L. Brode, The RAND Corporation, 'Review of Nuclear Weapons Effects,' *Annual Review of Nuclear Science*, Volume 18, 1968, pp. 153-202.

'It seems that similarities do exist between the processes of formation of single particles from nuclear explosions and formation of the solar system from the debris of a [ $4 \times 10^{28}$  megatons of TNT equivalent, type Ia] supernova explosion. We may be able to learn much more about the origin of the earth, by further investigating the process of radioactive fallout from the nuclear weapons tests.' - [Dr Paul K. Kuroda \(1917-2001\)](#), University of Arkansas, 'Radioactive Fallout in Astronomical Settings: Plutonium-244 in the Early Environment of the Solar System,' pages 83-96 of [Radionuclides in the Environment: A Symposium Sponsored By the Division of Nuclear Chemistry and Technology At the 155th Meeting of the American Chemical Society, San Francisco, California, April 1-3, 1968](#), edited by Symposium Chairman Dr Edward C. Freiling (1922-2000) of the U.S. Naval Radiological Defense Laboratory, Advances in Chemistry Series No. 93, American Chemical Society, Washington, D.C., 1970.



[Dr Paul K. Kuroda \(1917-2001\)](#) in 1956 correctly predicted the existence of water-moderated natural nuclear reactors in flooded uranium ore seams, which were discovered in 1972 by French physicist Francis Perrin in three ore deposits at Oklo in Gabon, where sixteen sites operated as natural nuclear reactors with self-sustaining nuclear fission 2,000 million years ago, each lasting several hundred thousand years, averaging 100 kW. The radioactive waste they generated remained in situ for a period of 2,000,000,000 years without escaping. They were discovered during investigations into why the U-235 content of the uranium in the ore was only 0.7171% instead of the normal 0.7202%. Some of the ore, in the middle of the natural reactors, had a U-235 isotopic abundance of just 0.440%. Kuroda's brilliant paper is entitled, 'On the Nuclear Physical Stability of the Uranium Minerals', published in the *Journal of Chemical Physics*, vol. 25 (1956), pp. 781–782 and 1295–1296.

A type Ia supernova explosion, always yielding  $4 \times 10^{28}$  megatons of TNT equivalent, results from the critical mass effect of the collapse of a white dwarf as soon as its mass exceeds 1.4 solar masses due to matter falling in from a companion star. The degenerate electron gas in the white dwarf is then no longer able to support the pressure from the weight of gas, which collapses, thereby releasing enough gravitational potential energy as heat and pressure to cause the fusion of carbon and oxygen into heavy elements, creating massive amounts of radioactive nuclides, particularly intensely radioactive nickel-56, but half of all other nuclides (including uranium and heavier) are also produced by the 'R' (rapid) process of successive neutron captures by fusion products in supernovae explosions. Type Ia supernovae occur typically every 400 years in the Milky Way galaxy. On 4 July 1054, Chinese astronomers observed in the sky (without optical instruments) the bright supernova in the constellation Taurus which today is still visible as the Crab Nebula through telescopes. The Crab Nebula debris has a diameter now of 7 light years and is still expanding at 800 miles/second. The supernova debris shock wave triggers star formation when it encounters hydrogen gas in space by compressing it and seeding it with debris; bright stars are observed in the Orion Halo, the 300 light year diameter remains of a supernova. It is estimated that when the solar system was forming 4,540 million years ago, a supernova occurred around 100 light years away, and the heavy radioactive debris shock wave expanded at 1,000 miles/second. Most of the heavy elements including iron, silicon and calcium in the Earth and people are the stable end products of originally radioactive decay chains from the space burst fallout of a  $7 \times 10^{26}$  megatons thermonuclear explosion, created by fusion and successive neutron captures after the implosion of a white dwarf; a supernova explosion.

How would a  $10^{55}$  megaton hydrogen bomb explosion differ from the big bang? Ignorant answers biased in favour of curved spacetime (ignoring quantum gravity!) abound, such as claims that explosions can't take place in 'outer space' (disagreeing with the facts from nuclear space bursts by Russia and America in 1962, not to mention natural supernova explosions in space!) and that explosions produce sound waves in air by definition! There are indeed major differences in the nuclear reactions between the big bang and a nuclear bomb. But it is helpful to notice the solid physical fact that implosion systems suggest the mechanism of gravitation: in implosion, TNT is well-known to produce an *inward* force on a bomb core, but Newton's 3rd law says there is an equal and opposite reaction force *outward*. In fact, you can't have a radially outward force without an inward reaction force! It's the rocket principle. The rocket accelerates (with force  $F = ma$ ) *forward* by virtue of the recoil from accelerating the exhaust gas (with force  $F = -ma$ ) in the *opposite* direction! Nothing massive accelerates without an equal and opposite reaction force. Applying this *fact* to the measured  $6 \times 10^{-10} \text{ ms}^{-2} \sim Hc$  cosmological acceleration of matter radially outward from observers in the universe which was predicted accurately in 1996 and later observationally discovered in 1999 (by Perlmutter, et al.), we find an outward force  $F = ma$  and inward reaction force by the 3rd law. The inward force allows quantitative predictions, and is mediated by gravitons, predicting gravitation in a checkable way (unlike string theory, which is just a landscape of  $10^{500}$  different perturbative theories and so can't make any falsifiable predictions about gravity). So it seems as if nuclear explosions do indeed provide helpful analogies to natural features of the world, and the mainstream lambda-CDM model of cosmology - with its force-fitted unobserved *ad hoc* speculative 'dark energy' - ignores and sweeps under the rug major quantum gravity effects which increase the physical understanding of particle physics, particularly force unification and the relation of gravitation to the existing electroweak SU(2) x U(1) section of the Standard Model of fundamental forces.

Richard Lieu, Physics Department, University of Alabama, 'Lambda-CDM cosmology: how much suppression of credible evidence, and does the model really lead its competitors, using all evidence?', <http://arxiv.org/abs/0705.2462>.

Even Einstein grasped the possibility that general relativity's lambda-CDM model is at best just a classical approximation to quantum field theory, at the end of his life when he wrote to Besso in 1954:

‘I consider it quite possible that physics cannot be based on the [classical differential equation] field principle, i.e., on continuous structures. In that case, nothing remains of my entire castle in the air, [non-quantum] gravitation theory included ...’

‘Science is the organized skepticism in the reliability of expert opinion.’ - Professor Richard P. Feynman (quoted by Professor Lee Smolin, *The Trouble with Physics*, Houghton-Mifflin, New York, 2006, p. 307).

‘The expression of dissenting views may not seem like much of a threat to a powerful organization, yet sometimes it triggers an amazingly hostile response. The reason is that a single dissenter can puncture an illusion of unanimity. ... Among those suppressed have been the engineers who tried to point out problems with the Challenger space shuttle that caused it to blow up. More fundamentally, suppression is a denial of the open dialogue and debate that are the foundation of a free society. Even worse than the silencing of dissidents is the chilling effect such practices have on others. For every individual who speaks out, numerous others decide to play it safe and keep quiet. More serious than external censorship is the problem of self-censorship.’

— Professor Brian Martin, University of Wollongong, 'Stamping Out Dissent', Newsweek, 26 April 1993, pp. 49-50

In 1896, Sir James Mackenzie-Davidson asked Wilhelm Röntgen, who discovered X-rays in 1895: ‘What did you think?’ Röntgen replied: ‘I did not think, I investigated.’ The reason? Cathode ray expert J. J. Thomson in 1894 saw glass fluorescence far from a tube, but due to prejudice (expert opinion) he avoided investigating that X-ray evidence! ‘Science is the organized skepticism in the reliability of expert opinion.’ - Richard Feynman, in Lee Smolin, *The Trouble with Physics*, Houghton-Mifflin, 2006, p. 307.

Mathematical symbols in this blog: your computer's browser needs access to standard character symbol sets to display Greek symbols for mathematical physics. If you don't have the symbol character sets installed, the density symbol ' $\rho$ ' (*Rho*) will appear as 'r' and the ' $\pi$ ' (*Pi*) symbol will as 'p', causing confusion with the use of 'r' for radius and 'p' for momentum in formulae. This problem exists with Mozilla Firefox 3, but not with Microsoft Explorer which displays Greek symbols.

#### About Me



Name: nige

Currently designing secure active server page (ASP) front ends for client SQL databases. In 1982 I began programming in basic, and at college learned Fortran while a physics undergraduate a decade later. Afterwards, I switched from mainstream physics and mathematical education to part-time programming student, while working in a series of jobs including four years in credit control. [www.quantumfieldtheory.org](http://www.quantumfieldtheory.org)  
<http://glasstone.blogspot.co.uk/2015/07/capabilities-of-nuclear-weapons.html/> <http://www.math.columbia.edu/~woit/wordpress/?p=273#comment-5322>. <http://www.math.columbia.edu/~woit/wordpress/?p=353&cpag=1#comment-8728>. <http://www.math.columbia.edu/~woit/wordpress/?p=215#comment-4082>.

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From 1945-62, America tested 216 nuclear weapons in the atmosphere, totalling 154 megatons, with a mean yield of 713 kilotons

From 1949-62, Russia tested 214 nuclear weapons in the atmosphere, totalling 281 megatons, with a mean yield of 1.31 megatons

From 1952-8, Britain tested 21 nuclear weapons in the atmosphere, totalling 10.8 megatons, with a mean yield of 514 kilotons

From 1960-74, France tested 46 nuclear weapons in the atmosphere, totalling 11.4 megatons, with a mean yield of 248 kilotons



From 1964-80, China tested 23 nuclear weapons in the atmosphere, totalling 21.5 megatons, with a mean yield of 935 kilotons

In summary, from 1945-80, America, Russia, Britain, France and China tested 520 nuclear weapons in the atmosphere, totalling 478.7 megatons, with a mean yield of 921 kilotons

Mean yield of the 5,192 nuclear warheads and bombs in the deployed Russian nuclear stockpile as of January 2009: 0.317 Mt. Total yield: 1,646 Mt.

Mean yield of the 4,552 nuclear warheads and bombs in the deployed U.S. nuclear stockpile as of January 2007: 0.257 Mt. Total yield: 1,172 Mt.

For diffraction damage where damage areas scale as the two-thirds power of explosive yield, this stockpile's area damage potential can be compared to the 20,000,000 conventional bombs of 100 kg size (2 megatons of TNT equivalent total *energy*) dropped on Germany during World War II: (Total nuclear bomb blast diffraction damaged ground *area*)/(Total conventional blast diffraction damaged ground *area* to Germany during World War II) =  $[4,552 \times (0.257 \text{ Mt})^{2/3}] / [20,000,000 \times (0.0000001 \text{ Mt})^{2/3}] = 1,840/431 = 4.3$ . Thus, although the entire U.S. stockpile has a TNT *energy* equivalent to 586 times that of the 2 megatons of conventional bombs dropped on Germany in World War II, it is only capable of causing 4.3 times as much diffraction type damage area, because *any given amount of explosive energy is far more efficient when distributed over many small explosions than in a single large explosion! Large explosions are inefficient because they cause unintended collateral damage, wasting energy off the target area and injuring or damaging unintended targets!*

In a controlled sample of 36,500 survivors, 89 people got leukemia over a 40 year period, above the number in the unexposed control group. (Data: *Radiation Research*, volume 146, 1996, pages 1-27.) Over 40 years, in 36,500 survivors monitored, there were 176 leukemia deaths which is 89 more than the control (unexposed) group got naturally. There were 4,687 other cancer deaths, but that was merely 339 above the number in the control (unexposed) group, so this is statistically a much smaller rise than the leukemia result. Natural leukemia rates, which are very low in any case, were increased by 51% in the irradiated survivors, but other cancers were merely increased by just 7%. Adding all the cancers together, the total was 4,863 cancers (virtually all natural cancer, nothing whatsoever to do with radiation), which is just 428 more than the unexposed control group. Hence, the total increase over the natural cancer rate due to bomb exposure was only 9%, spread over a period of 40 years. There was no increase whatsoever in genetic malformations.

There should be a note here about how unnatural radioactive pollution is (not) in space: the earth's atmosphere is a radiation shield equivalent to being protected behind a layer of water 10 metres thick. This reduces the cosmic background radiation by a factor of 100 of what it would be without the earth's atmosphere. Away from the largely uninhabited poles, the Earth's magnetic field also protects us against charged cosmic radiations, which are deflected and end up spiralling around the magnetic field at high altitude, in the Van Allen trapped radiation belts. *On the Moon, for example, there is no atmosphere or significant magnetic field so the natural background radiation exposure rate at solar minimum is 1 milliRoentgen per hour (about 10 microSieverts/hour) some 100 times that on the Earth (0.010 milliRoentgen per hour or about 0.10 microSieverts/hour). The Apollo astronauts visiting the Moon wore dosimeters and they received an average of 275 milliRoentgens (about 2.75 milliSieverts) of radiation (well over a year's exposure to natural background at sea level) in over just 19.5 days. It is a lot more than that during a solar flare, which is one of the concerns for astronauts to avoid (micrometeorites are another concern in a soft spacesuit).*

The higher up you are above sea level, the less of the atmosphere there is between you and space, so the less shielding you have to protect you from the intense cosmic space radiations (emitted by thermonuclear reactors we call 'stars', as well as distant supernovae explosions). At sea level, the air above you constitutes a radiation shield of 10 tons per square metre or the equivalent of having a 10 metres thick water shield between you and outer space. As you go up a mountain or up in an aircraft, the amount of atmosphere between you and space decreases, thus radiation levels increase with altitude because there is less shielding. *The normal background radiation exposure rate shoots up by a factor of 20, from 0.010 to 0.20 milliRoentgens per hour, when any airplane ascends from sea level to 36,000 feet cruising altitude.* (The now obsolete British Concorde supersonic

transport used to maintain radiation-monitoring equipment so that it could drop to lower-altitude flight routes if excessive cosmic radiation due to solar storms were detected.) Flight aircrew get more radiation exposure than many nuclear industry workers at nuclear power plants. Residents of the high altitude city of Denver get 100 milliRoentgens (about 1 milliSievert) more annual exposure than a resident of Washington, D.C., but the mainstream anti-radiation cranks don't campaign for the city to be shut to save kids radiation exposure, for mountain climbing to be banned, etc.!

1994 revised Introduction to Kearny's Nuclear War Survival Skills, by Dr Edward Teller, January 14, 1994:

'If defense is neglected these weapons of attack become effective. They become available and desirable in the eyes of an imperialist dictator, even if his means are limited. Weapons of mass destruction could become equalizers between nations big and small, highly developed and primitive, if defense is neglected. If defense is developed and if it is made available for general prevention of war, weapons of aggression will become less desirable. Thus defense makes war itself less probable. ... One psychological defense mechanism against danger is to forget about it. This attitude is as common as it is disastrous. It may turn a limited danger into a fatal difficulty.'

Advice of Robert Watson-Watt (Chief Scientist on the World War II British Radar Project, defending Britain against enemy attacks): 'Give them the third best to go on with, the second best comes too late, the best never comes.'

From Wikipedia (a source of groupthink): 'Groupthink is a type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analyzing, and evaluating ideas. Individual creativity, uniqueness, and independent thinking are lost in the pursuit of group cohesiveness, as are the advantages of reasonable balance in choice and thought that might normally be obtained by making decisions as a group. During groupthink, members of the group avoid promoting viewpoints outside the comfort zone of consensus thinking. A variety of motives for this may exist such as a desire to avoid being seen as foolish, or a desire to avoid embarrassing or angering other members of the group. Groupthink may cause groups to make hasty, irrational decisions, where individual doubts are set aside, for fear of upsetting the group's balance.'

#### Links

- ◆ [Google News](#)
- ◆ [Dr Carl E. Baum's EMP theory and interaction notes](#)
- ◆ [The Atomic Heritage Foundation](#)
- 🗑️ [Radiation Effects Research Foundation lumps data together to cover up benefits of low dose radiation in Hiroshima and Nagasaki Life Span Study!](#)
- ◆ [DTRA \(Defense Threat Reduction Agency\) Nuclear testing histories \(PDF files\)](#)
- ◆ [Samuel Glasstone and Philip J. Dolan](#)
- ◆ [Carl F. Miller's fallout research at nuclear tests](#)
- ◆ [British Home Office Scientific Advisory Branch](#)
- ◆ [Samuel Cohen's book about the collateral damage averting, invasion-detering neutron bomb he invented, and the lying political attacks he endured as a result](#)
- ◆ [Jerry Emanuelson's review of EMP facts, including the direct dependence of the EMP on the Earth's natural magnetic field strength at the burst location](#)
- ◆ [Essays by 1950s American nuclear weapon effects test \(and neutron bomb design\) experts, discrediting anti-civil defence propaganda](#)
- 🗑️ [Neutron bomb inventor Samuel Cohen's 2006 book on the history of the neutron bomb, the most moral weapon ever invented due to its purely military deterrent capabilities, and the pseudo-scientific propaganda war he has had to endure from the enemies of deterrence](#)
- 🗑️ [Karl-Ludvig Grønhaug's EMP reports page with useful PDF downloads on prompt EMP and MHD-EMP measurements from nuclear tests \(Norwegian language\)](#)
- ◆ [Colonel Derek L. Duke's factual book on nuclear weapons accidents, \*Chasing Loose Nukes, as told to Fred Dungan\*](#)

- ◆ The H-Bomb and the birth of the Universe: 'For 100 Million years after time began, the universe was dark as pitch. The clouds of hydrogen condensed into huge nuclear fireballs. That moment-when the universe first lit up-was the moment of creation that matters...'
- ◆ American *EMP Interaction* manual: comprehensive theory of both the EMP source mechanism and the EMP pick-up in cables and antenna by electromagnetic inductance (30 MB PDF file)
- ◆ British Mission to Japan, *The Effects of the Atomic Bombs at Hiroshima and Nagasaki*, H. M. Stationery Office, London, 1946 (high quality 42.5 MB pdf file).
- ◆ 1950 edition (high quality 82.7 MB PDF file) of U.S. Department of Defense book *The Effects of Atomic Weapons*
- ◆ 1957 edition (high quality 90.8 MB PDF file) of subsequently deleted sections on nuclear tests of civil defense countermeasures from U.S. Department of Defense book *The Effects of Nuclear Weapons*
- ◆ 1957 edition (low quality 30.6 MB PDF file) of entire U.S. Department of Defense book *The Effects of Nuclear Weapons*
- ◆ 1962/64 edition (high quality 188 MB PDF file) of major revised sections in the U.S. Department of Defense book *The Effects of Nuclear Weapons*
- ◆ 1962/64 edition (high quality 43.8 MB PDF file) of 74 pages of subsequently deleted material dealing with thermal ignition of houses at nuclear tests and civil defense countermeasures chapter, from the U.S. Department of Defense book *The Effects of Nuclear Weapons*
- ◆ 1977 edition (single 36.8 MB PDF file) of U.S. Department of Defense book *The Effects of Nuclear Weapons*
- ◆ Bill Forstchen, "One Second After" book about EMP attack risk and its effects on USA.
- ◆ U.S. Department of Energy Opennet Documents Online (includes many Nevada and Pacific nuclear test reports as PDF files)
- ◆ Defense Technical Information Center (DTIC)'s Scientific and Technical Information Network (STINET) Service (other declassified Nevada and Pacific test reports)
- ◆ Highlights from ABM testing history
- ◆ THAAD Goes Another ABM Test
- ◆ Alex Wellerstein's Restricted Data blog contains some interesting news (but beware of his uncritical use of unobstructed dry desert and nude skin thermal radiation and other effects predictions from the 1977 edition of Glasstone and Dolan; he deletes critically objective comments and pretends that honest criticisms of propaganda as being ignorant deception are rude as an excuse for ignoring the facts and refusing to engage in objective discussion of controversial aspects of this topic; basically if you pay homage and engage in groupthink bias you may be tolerated).
- ◆ Carey Sublette's Nuclear Weapon Archive (it contains errors from Chuck Hansen's compilation, and it is concentrated on bomb building, not on civil defence countermeasure evaluations done at nuclear tests; note that Chuck Hansen's books and CDs give a false quotation from Neil O' Hines's book *Proving Ground* on the effects of the 10 megaton 1952 Mike explosion claiming that rats were wiped out on nearby Engebi Island, covered in heavy fallout just 2.3 miles from ground zero, whereas in fact Hines later in his book states that the native rats in fact *survived the intense close-in blast, heat and fallout under a few unches of soil, despite the initial ignorant belief that they could not have survived!* There were also follow-ups on the rats in the real fallout environment, showing none of the predicted effects from fallout uptake from food on the island. Rather than proving doomsday predictions, it proved survival is possible. Whoops! Not something for the front page headline in "Bulletin of the Atomic Scientists", "Scientific American", et al!)
- Quantum Field Theory
- Los Alamos Science journal
- Excellent particle physics gauge theory (fundamental force interaction) issue of Los Alamos Science journal

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[Chemical and Biological Warfare Protective Measures](#)



**Western tactical neutron bombs were disarmed after...**



**The lack of any credible deterrence led to the inv...**



**Who is really behind this nuclear weapons effects ...**



**Gas masks or EH20 escape hoods as an alternative t...**



**Russian GRU spies, Novichok, and World War III: ho...**



**Americium-241 gamma radiation from smoke detectors...**



**New data on the Hiroshima firestorm on fallout eff...**



**The January 1955 secret Fallout symposium of the A...**



Racist socialist and hatred inciting propaganda fr...



1929 photo of Dr Samuel Glasstone for a Leeds Merc...

The Bank of Japan, Hiroshima, survived 380 m from Ground Zero, within the firestorm area, when fires were extinguished by water buckets by its survivors, the majority of people in the building having survived. Secret US Strategic Bombing Survey report proves civil defense for modern concrete buildings is effective. The building was reopened as a bank on 8 August, merely two days after nuclear attack, and continued in use as a bank until 1992. It remains in Hiroshima. This beautifully designed and sturdy reinforced concrete building was designed in 1936 by Nagano Uheiji. We need to ensure that the worst mistakes of the past are never repeated, if we are just, moral and caring towards our fellow human beings who do not deserve to be fed lies and dangerously complacent one-sided, biased propaganda based on a populist love of obsolete dogma, and/or a hatred of the search for objective fact, by pseudo-educationalists who prefer to live in utopia than in the real world of their fellow folk!"

"When They Drop the Atomic Bomb" by Jackie Doll and his ...



ACKNOWLEDGEMENTS: (1). Thank you to <http://www.militarystory.org/nuclear-detonations-in-urban-and-suburban-areas/> for re-blogging a typical post from this [glasstone.blogspot.com](https://glasstone.blogspot.com) blog, kicking out the lies from under secrecy obsessed loons who want disarmament to start WWII.

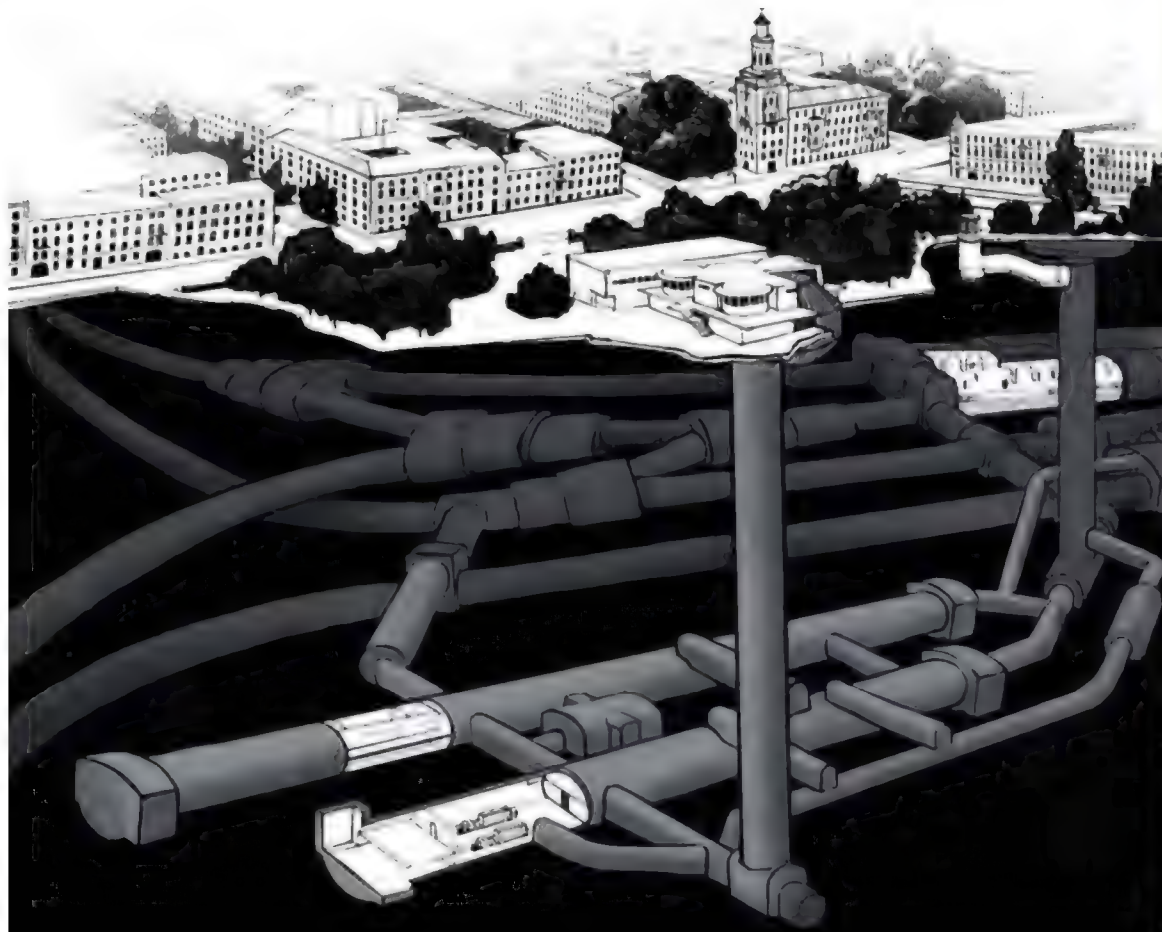


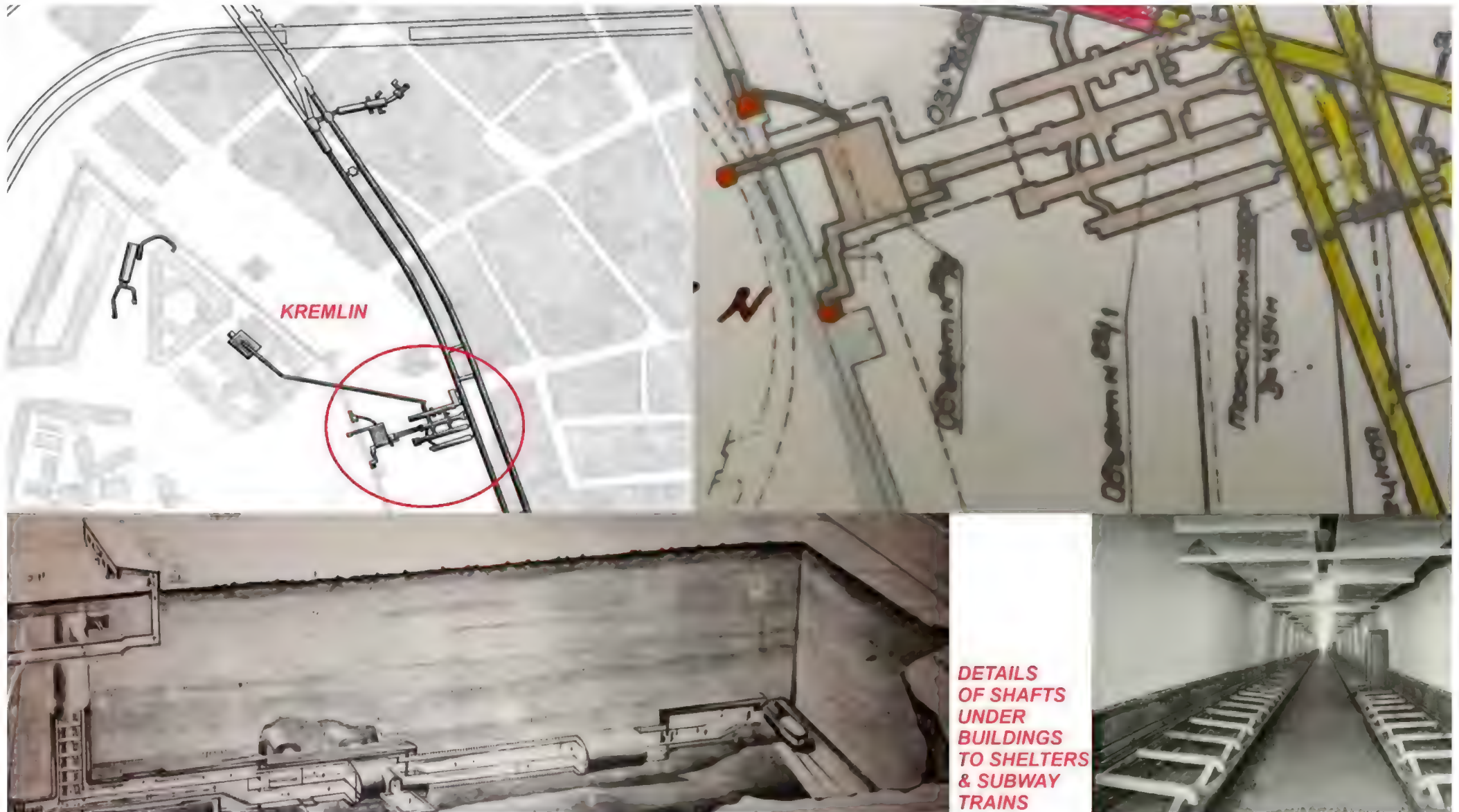
(2). Thank you to <https://www.nextbigfuture.com/2016/02/are-nuclear-weapons-100-times-less.html> for reblogging: "Are [strategic, not tactical] Nuclear Weapons 100 times Less Effective Than Supposed? Nigel B. Cook's Glasstone.Blogspot Blog has beautiful coverage of many nuclear topics here. <http://glasstone.blogspot.co.uk/> Cook is a master researcher who digs up incredible piles of research on all topics nuclear and the following is digest of various writings of his gathered for easy access centered on the remarkable thesis that the effects of nuclear weapons, while literally awesome, have been exaggerated or misunderstood to an even greater extent, with perhaps very considerable military consequences."

TIPS: There is compendium debunking commonplace anti-nuclear CND disarmament propaganda, exaggerations and fake news on nuclear weapons effects and deterrent capabilities [linked here](#). Also, each post on this blog can be viewed in either a simple format, e.g. for this current post, <https://glasstone.blogspot.com/2022/02/analogy-of-1938-munich-crisis-and.html> is the simple (faster loading) format, or you can view it (slower loading) in a fancy format by adding: `?m=1` to the end of the URL, e.g. <https://glasstone.blogspot.com/2022/02/analogy-of-1938-munich-crisis-and.html?m=1>

"The Budapest [Memorandum on Security Assurances ... at the OSCE conference in Budapest, Hungary on 5 December 1994 ... signed by three nuclear powers: the Russian Federation, the United Kingdom and the United States ... prohibited the Russian Federation, the United Kingdom and the United States from threatening or using military force or economic coercion against Ukraine, Belarus, and Kazakhstan. As a result of other agreements and the memorandum, between 1993 and 1996, Belarus, Kazakhstan and Ukraine gave up their nuclear weapons.](#)" - Wiki.

NATO needs to come to its senses and rearm to deter WWII instead of stupidly leaving Putin with more nuclear weapons than anyone else, to intimidate like Hitler (see 1930s newspapers below, which spell out the problem plainly). The problem is, the media is dominated by nuclear liars just as it was dominated by gas war liars in the 1930s, who encouraged war while pretending to be doing the opposite. Fighting a conventional war using Ukraine as proxy, while having an inferior nuclear stockpile, is hardly credible nuclear deterrence (please click here for our brief declassified data debunking Glasstone's lying data on nuclear weapons effects) . Also see the compendium [linked here](#) for more detail on the actual declassified effects found in Hiroshima, contrary to Glasstone's very deceptive treatment. "Disarmament and arms control" charlatans, quacks, cranks, liars, mass murdering Russian affiliates, and evil genocidal Marxist media exposed for what it is, what it was in the 1930s when it enabled Hitler to murder tens of millions in war!







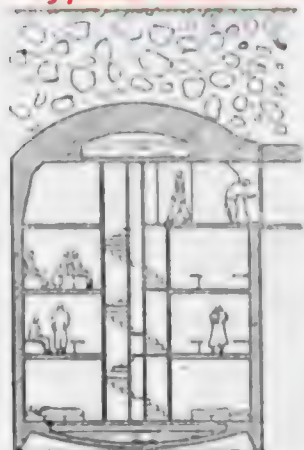


233,067 views Streamed live on 18 Apr 2021 - <https://www.youtube.com/watch?v=Vpz0TOA1cLM>

## BUNKER 703 - SPECIAL STORAGE OF THE USSR MFA - MUSEUM OF MODERN FORTIFICATION

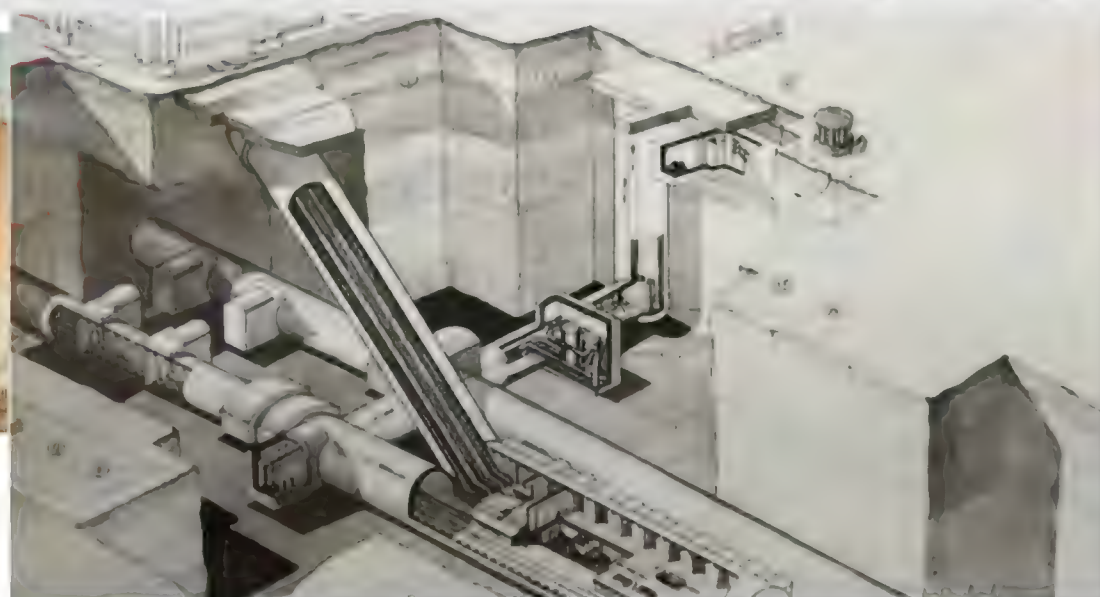
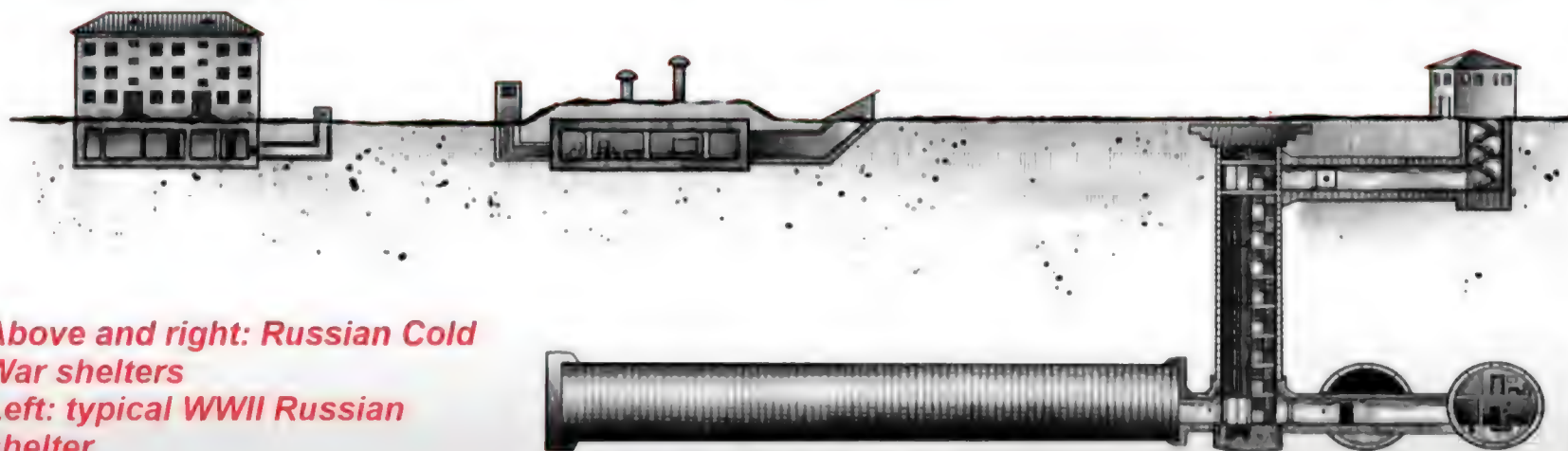
Lecture by historian Dmitry Yurkov dedicated to the declassified "bunkers" of Moscow. Based on a new book about the history of Soviet special fortification. For the first time - about "metro 2" and "Stalin's bunkers" without fiction and myths, based on archival materials.

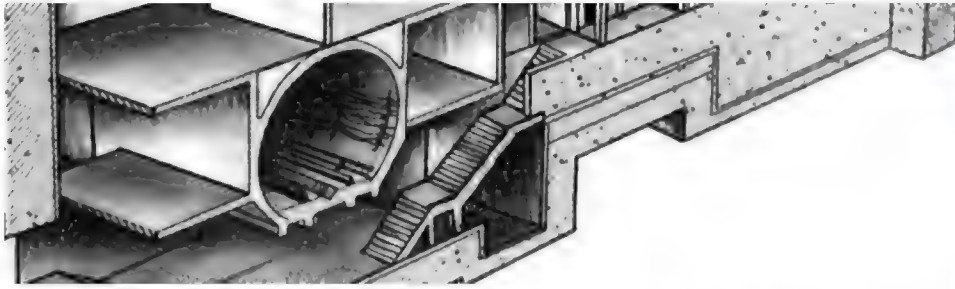
Типовое убежище  
**Typical shelter**



0  
5  
10  
15 м

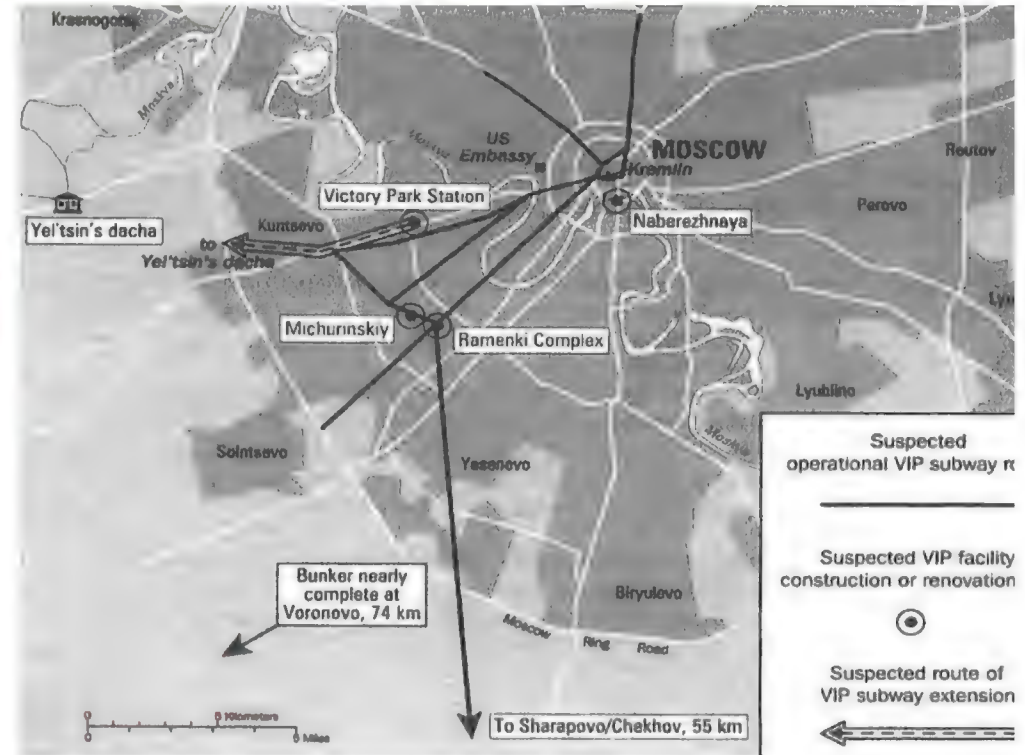
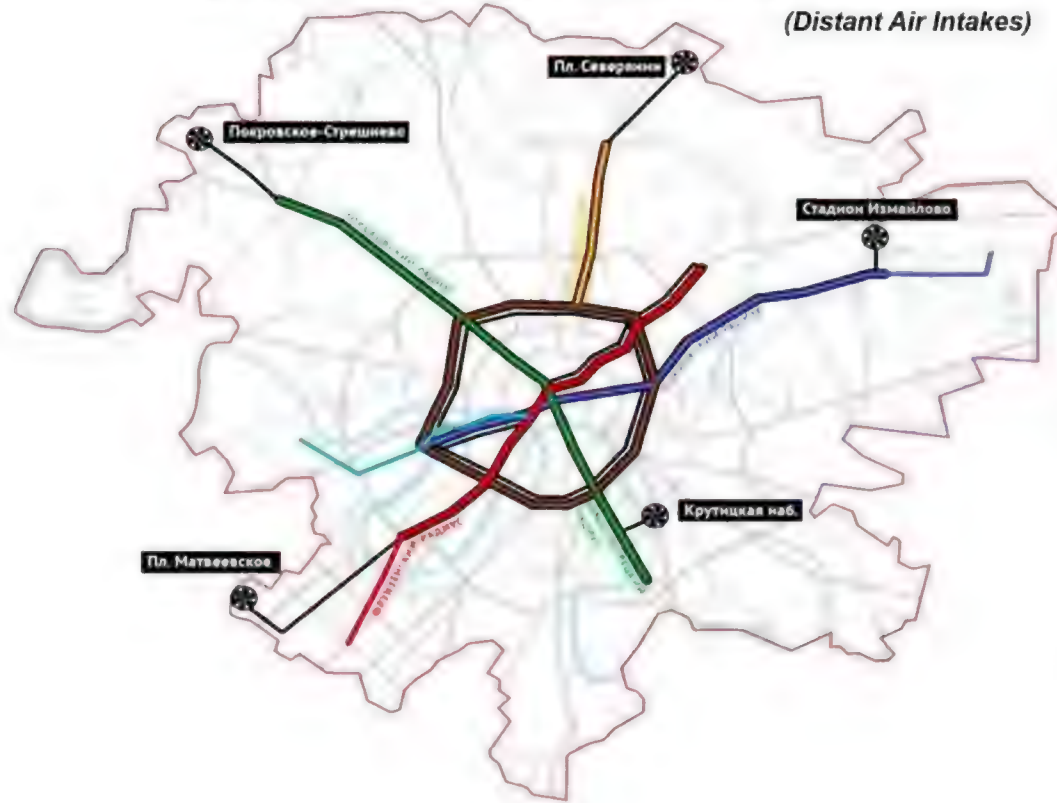
**Above and right: Russian Cold War shelters**  
**Left: typical WWII Russian shelter**





## ДАЛЬНИЕ ВОЗДУХОЗАБОРЫ

(Distant Air Intakes)





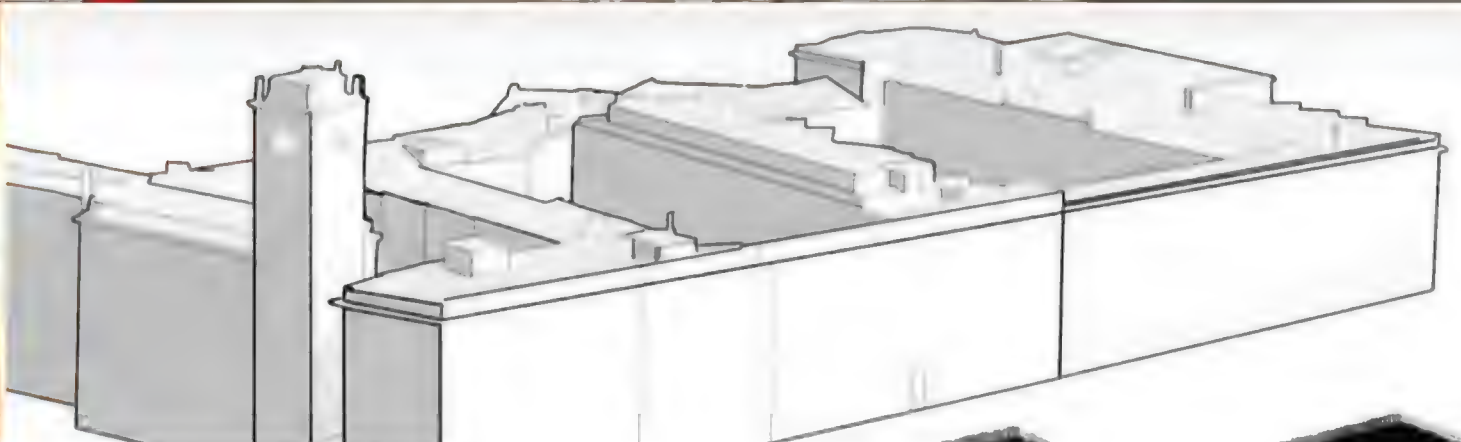
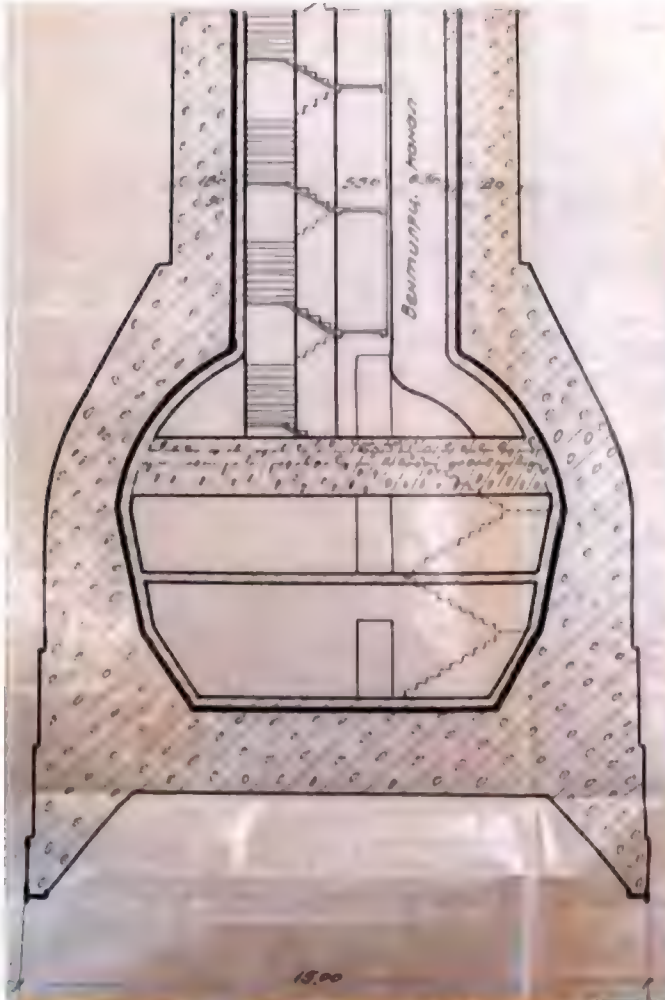




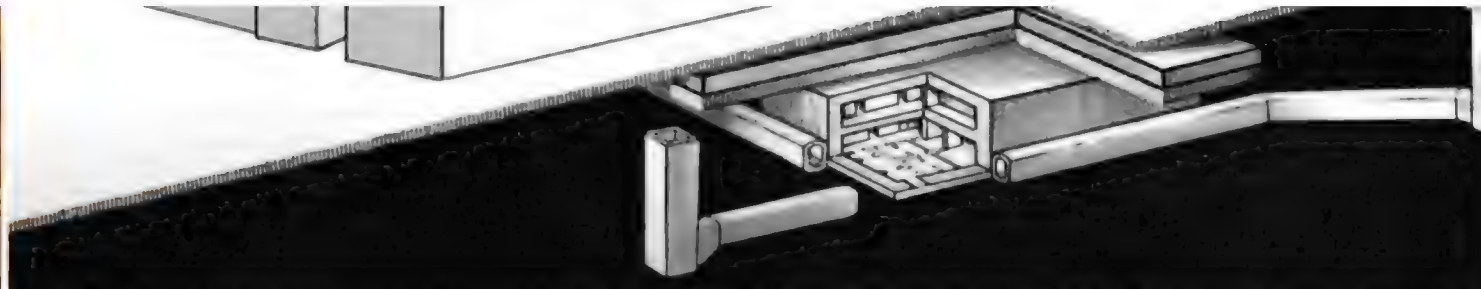










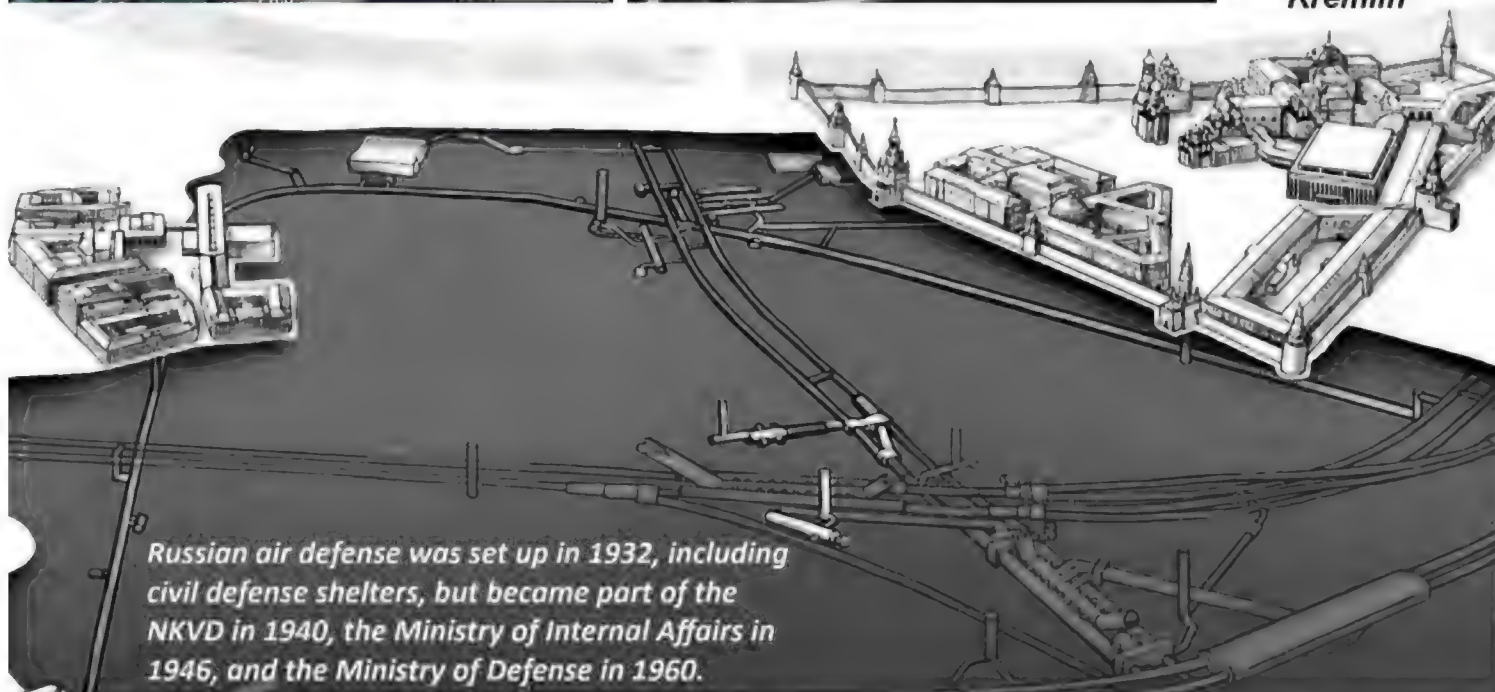
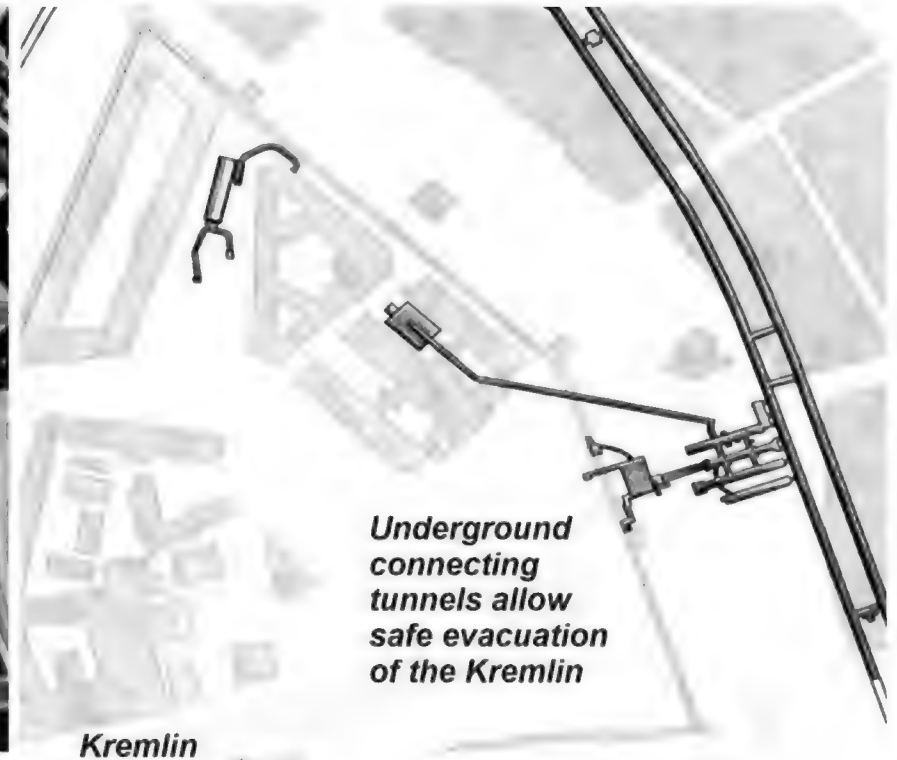
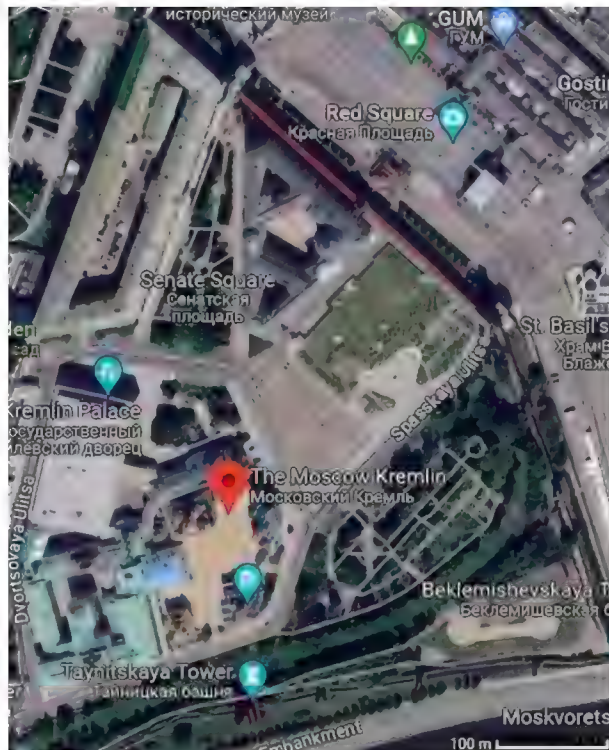


**All of this data should have been published to inform public debate on the basis for credible nuclear deterrence of war and civil defense, PREVENTING MILLIONS OF DEATHS SINCE WWII, instead of dDELIBERATELY allowing enemy anti-nuclear and anti-civil defence lying propaganda from Russian supporting evil fascists to fill the public data vacuum, killing millions by allowing civil defence and war deterrence to be dismissed by ignorant "politicians" in the West, so that wars triggered by invasions with mass civilian casualties continue today for no purpose other than to promote terrorist agendas of hate and evil arrogance and lying for war, falsely labelled "arms control and disarmament for peace": "Controlling escalation is really an exercise in deterrence, which means providing effective disincentives to unwanted enemy actions. Contrary to widely endorsed opinion, the use or threat of nuclear weapons in tactical operations seems at least as likely to check [as Hiroshima and Nagasaki] as to promote the expansion of hostilities [providing we're not in a situation of Russian biased arms control and disarmament whereby we've no tactical weapons while the enemy has over 2000 neutron bombs thanks to "peace" propaganda from Russian thugs]." - Bernard Brodie, pvi of Escalation and the nuclear option, RAND Corp memo RM-5444-PR, June 1965.**

Update (19 January 2024): Jane Corbin of BBC TV is continuing to publish ill-informed nuclear weapons capabilities nonsense debunked here since 2006 (a summary of some key evidence is linked here), e.g. her 9pm 18 Jan 2024 CND biased propaganda showpiece Nuclear Armageddon: How Close Are We? <https://www.bbc.co.uk/iplayer/episode/m001vgq5/nuclear-armageddon-how-close-are-we> which claims - from the standpoint of 1980s Greenham Common anti-American CND propaganda - that the world would be safer without nuclear weapons, despite the 1914-18 and 1939-45 trifles that she doesn't even bother to mention, which were only ended with nuclear deterrence. Moreover, she doesn't mention the BBC's Feb 1927 WMD exaggerating broadcast by Noel-Baker which used the false claim that there is no defence against mass destruction by gas bombs to argue for UK disarmament, something that later won him a Nobel Peace Prize and helped ensure the UK had no deterrent against the Nazis until too late to set off WWII (Nobel peace prizes were also awarded to others for lying, too, for instance Norman Angell whose pre-WWI book *The Great Illusion* helped ensure Britain's 1914 Liberal party Cabinet procrastinated on deciding what to do if Belgium was invaded, and thus failed deter the Kaiser from triggering the First World War!). The whole basis of her show was to edit out any realism whatsoever regarding the topic which is the title of her programme! No surprise there, then. Los Alamos, Livermore and Sandia are currently designing the W93 nuclear warhead for SLBM's to replace the older W76 and W88, and what she should do next time is to address the key issue of what that design should be to deter dictators without risking escalation via collateral damage: "To enhance the flexibility and responsiveness of our nuclear forces as directed in the 2018 NPR, we will pursue two supplemental capabilities to existing U.S. nuclear forces: a low-yield SLBM warhead (W76-2) capability and a modern nuclear sea launched cruise missile (SLCM-N) to address regional deterrence challenges that have resulted from increasing Russian and Chinese nuclear capabilities. These supplemental capabilities are necessary to correct any misperception an adversary can escalate their way to victory, and ensure our ability to provide a strategic deterrent. Russia's increased reliance on non-treaty accountable strategic and theater nuclear weapons and evolving doctrine of limited first-use in a regional conflict, give evidence of the increased possibility of Russia's employment of nuclear weapons. ... The NNSA took efforts in 2019 to address a gap identified in the 2018 NPR by converting a small number of W76-1s into the W76-2 low-yield variant. ... In 2019, our weapon modernization programs saw a setback when reliability issues emerged with commercial off-the-shelf non-nuclear components intended for the W88 Alteration 370 program and the B61-12 LEP. ... Finally, another just-in-time program is the W80-4 LEP, which remains in synchronized development with the LRSO delivery system. ... The Nuclear Weapons Council has established a requirement for the W93 ... If deterrence fails, our combat-ready force is prepared now to deliver a decisive response anywhere on the globe ..." - Testimony of Commander Charles Richard, US Strategic Command, to the Senate Committee on Armed Services, 13 Feb 2020. This issue of how to use nuclear weapons safely to deter major provocations that escalate to horrific wars is surely the key issue humanity should be concerned with, not the CND time-machine of returning to a non-nuclear 1914 or 1939! Corbin doesn't address it; she uses debunked old propaganda tactics to avoid the real issues and the key facts.

For example, Corbin quotes only half a sentence by Kennedy in his TV speech of 22 October 1962: "it shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western hemisphere as an attack by the Soviet Union on the United States", and omits the second half of the sentence, which concludes: "requiring a full retaliatory response upon the Soviet Union." Kennedy was clearly using US nuclear superiority in 1962 to deter Khrushchev from allowing the Castro regime to start any nuclear war with America! By chopping up Kennedy's sentence, Corbin juggles the true facts of history to meet the CND agenda of "disarm or be annihilated." Another trick is her decision to uncritically interview CND biased anti-civil defense fanatics like the man (Professor Freedman) who got Bill Massey of the Sunday Express to water down my article debunking pro-war CND type "anti-nuclear" propaganda lies on civil defense in 1995! Massey reported to me that Freedman claimed civil defense is no use against a H-bomb, which he claims is cheaper than dirt cheap shelters, exactly what Freedman wrote in his deceptive letter published in the 26 March 1980 Times newspaper: "for far less expenditure the enemy could make a mockery of all this by increasing the number of attacking weapons", which completely ignores the Russian dual-use concept of simply adding blast doors to metro tubes and underground car parks, etc. In any case, civil defense makes deterrence credible as even the most hard left wingers like Duncan Campbell acknowledged on page 5 of *War Plan UK* (Paladin Books, London, 1983): "Civil defence ... is a means, if need be, of putting that deterrence policy, for those who believe in it, into practical effect."









Прошу рассмотреть разработанный Министерством путей сообщения технический проект на работы по оборудованию Московского метрополитена под массовое убежище, и свои предложения представить в Совет Министров СССР.

Срок 20 дней.

8/1-53 г.

*С. М. Мамонтов*

Министр  
путей сообщения  
СССР

1/XI 1952 г.  
№ 007806пр

Копия  
Сов. Секретно

В СОВЕТ МИНИСТРОВ СОЮЗА ССР

РАСЕКРЕЧЕНО

Во исполнение Постановления Совета Министров СССР от 10/XI 1952г. 2699-1007сс Министерством путей сообщения разработан и представляется на утверждение технический проект и генеральная смета на спецустройства по приспособлению и оборудованию Московского метрополитена под бомбоубежище и газоубежище для населения.

Проект предусматривает оборудование линии метрополитена по 1 этапу работ: защитно-герметическими и герметическими затворами, фильтровентиляционными установками, санитарно-техническими узлами, водоснабжением, энергоснабжением, аварийным освещением, связью, радиовещанием и защитными тиффами.

Под убежище используются тоннели и станции имеющие естественную защитную толщу грунта от однократного действия ФАБ-2500, по следующим линиям метрополитена глубокого заложения:

Кировско-Фрунзенский диаметр	- 2 км
Горьковско-Замоскворецкий диаметр	- 9,6 км
Покровско-Арбатский	-12,0 км
Кольцевая линия	-19,3 км

Общее протяжение трассы линии Метрополитена глубокого заложения используемых под массовое бомбо и газоубежище составляет 42,9 км.

Суммарная вместимость тоннелей и станций по всем линиям - 822 тыс. человек.

Для защиты тоннелей и станций от удара взрывной волны и от проникновения ОВ предусматривается установка защитно-герметических затворов.

I ask you to consider the technical project developed by the Ministry of Railways for work on the equipment of the Moscow Metro for mass shelter, and submit your proposals to the Council of Ministers of the USSR

The term is 20 days

8/1-53 g.

*С. М. Мамонтов*

podzemnayamoskva.ru

Minister  
of Railways S  
SSR

1/XI 1952  
№ 007806pr

A copy  
of the Orls. Secre

TO THE COUNCIL OF MINISTERS OF THE USSR

DECLASSIFIED

In pursuance of the Resolution of the Council of Ministers of the USSR of 10/XI 1952. 2699-1007ss, the Ministry of Railways has developed and submitted for approval a technical project and a general estimate for special devices 1VO for the adaptation and equipment of the Moscow metro for a bomb and a gas shelter for the population.

The project provides for the equipment of the metro line for 1 stage of work: protective-hermetic and hermetic gates, filter-ventilation installations, sanitary-technical units, water supply, power supply, emergency lighting, communications, radio broadcasting and protective mattresses.

Tunnels and stations with a natural protective layer of soil from a single action of FAB-2500 are used for shelter, along the following deep-laid metro lines:

Kirovsko-Frunzensky diameter	- 2 km
Gorky-Zamoskvoretsky diameter	- 9.6 km
Pokrovsko-Arbatsky	-12.0 km
Ring line	-19.3 km

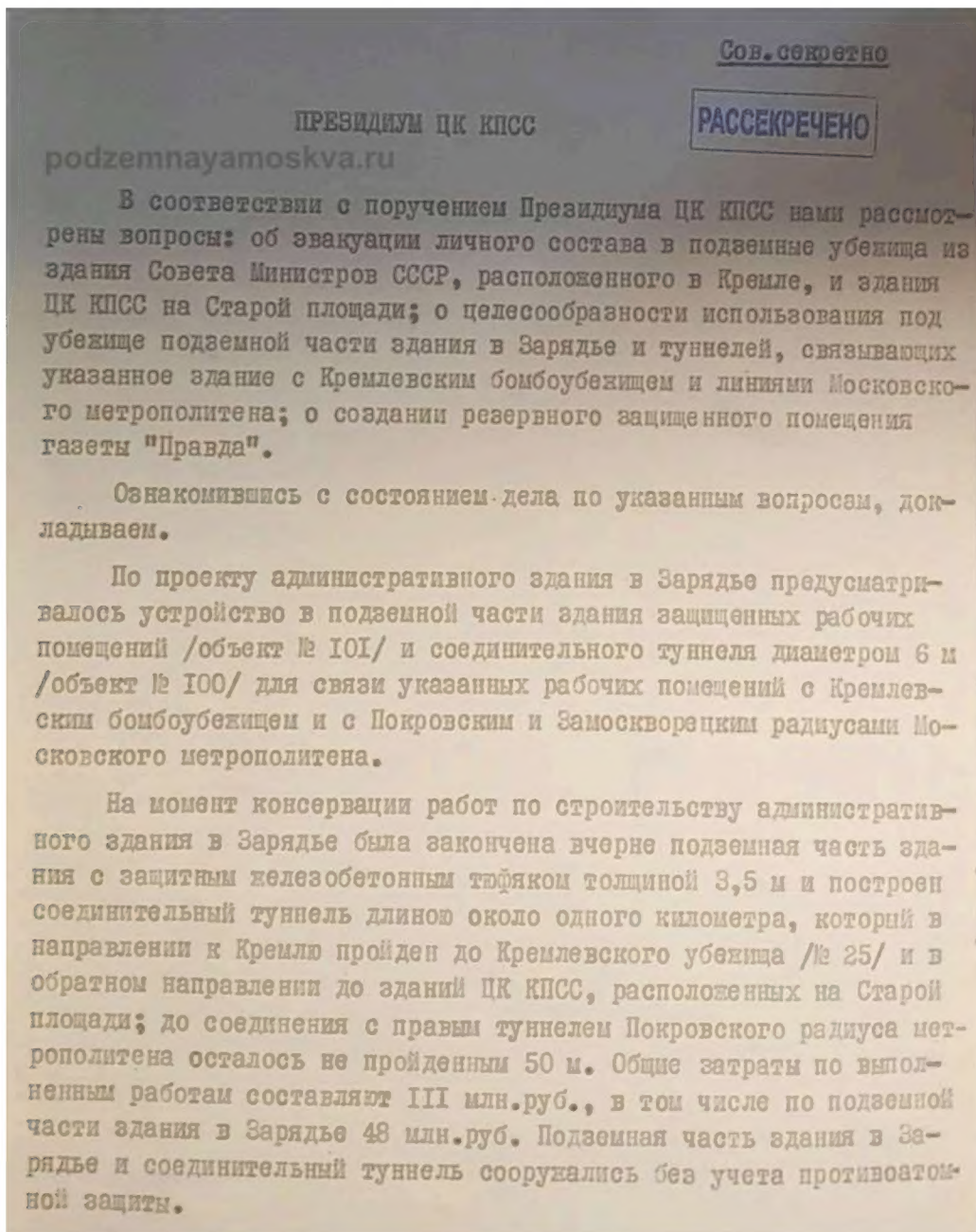
The total length of the route of the deep-laid Metro line used for mass bomb and gas shelter is 42.9 km

The total capacity of tunnels and stations on all lines is 822 thousand people. **[Hence, Russian metro shelter could shelter 822,000!]**

To protect tunnels and stations from the impact of an explosive wave and from penetration OV provides for the installation of protective and hermetic closures

SOURCE: Dmitry Yurkov, <http://podzemnayamoskva.ru/475-2/>





## TRANSLATION

Sov, secret

DECLASSIFIED

## PRESIDIUM OF THE CENTRAL COMMITTEE OF THE CPSU

*In accordance with the instructions of the Presidium of the Central Committee of the CPSU, we have considered the following issues: the evacuation of personnel to underground shelters from the building of the Council of Ministers of the USSR, located in the Kremlin, and the building the Central Committee of the CPSU on the Old Square; on the expediency of using the underground part of the building in Zaryadye as a shelter and tunnels connecting the specified building with the Kremlin bomb shelter and the line of the Moscow Metro; on the creation of a backup protected room of the newspaper Pravda.*

*Having familiarized with the state of the case on these issues, we report.*

*According to the project of the administrative building in Zaryadye, there was a device in the lower part of the building of protected workrooms /object no IOI/ and a connecting tunnel with a diameter of 6 m /object no. IOO/ for connecting these workrooms with the Kremlin bomb shelter and with the Pokrovsky and Zamoskvoretsky radpuses of the Moscow metro.*

*At the time of conservation of the construction of the administrative building in Zaryadye, the underground part of the building with a protective reinforced concrete mattress 3.5 m thick was completed in rough and a connecting tunnel about one kilometer long was built, which in the direction to the Kremlin, it was passed to the Kremlin Shelter / No. 25/ and in the opposite direction to the buildings of the Central Committee of the CPSU located on Old Square; 50 m remained to be passed before connecting with the right tunnel of the Pokrovsky metro radius. The total costs of the work performed amount to III million rubles, including 48 million rubles for the underground part of the building in Zaryadye. The underground part of the building in Zaryadye and the connecting tunnel were constructed without taking into account the anti-atomic protection.*

**Metro-2 SOURCE: Dmitry Yurkov at <https://podzemnayamoskva.ru/zarad11>**





SOURCE: <https://vniitf.ru/article/meropriyatiya> Backup at: <https://web.archive.org/save/https://vniitf.ru/article/meropriyatiya>

CAPTION: Пагуошская конференция. С 11 по 13 сентября 1997 г. в Снежинске состоялась IV Международная Пагуошская конференция «Состояние и перспективы ядерных комплексов США и России». В работе конференции приняли участие ученые из России, США, Великобритании, ФРГ, Японии, Франции, Италии, Швеции, Швейцарии и Китая. Конференция проходила два дня и обсуждались проблемы ядерных городов, вопросы международного сотрудничества лабораторий, технологические аспекты разоружения.

TRANSLATION: Pugwash Conference. From September 11 to 13, 1997, the IV International Pugwash Conference "Status and Prospects of the Nuclear Complexes of the USA and Russia" was held in Snezhinsk. Scientists from Russia, the USA, Great Britain, Germany, Japan, France, Italy, Sweden, Switzerland and China took part in the conference. The conference lasted two days and discussed the problems of nuclear cities, issues of international cooperation between laboratories, and technological aspects of disarmament.

